IDG.net

IT life hurts so good in The Bay and The Valley. Long hours. High stress. Little appreciation. But who cares? IT Careers, page 72

Teaching [illegible] techie jargon [illegible] Bank. Corporate [illegible]

COMPUTERWORLD

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Power payback

▸ *$1M tech investment snags Enron $500M pact*

By Thomas Hoffman

HOW WOULD YOU like a 500% return on your investment in less than four months?

Enron Corp. did. The Houston energy giant's $500 million deal last week to supply electricity to California's universities and state colleges was made possible by a technology investment of less than $1 million. It funded the rapid development of a software system that reads customer meters and processes the data for billing purposes.

Last October, California's Public Utility Commission demanded that new entrants in the soon-to-be-deregulated electric market here develop by mid-December 1997 so-called meter data management agents for commercial customers that use as much energy as, for example, a Taco Bell restaurant. The systems had to be certified by utility distribution companies such as San Francisco-based Pacific Gas & Electric Co. and Southern California Edison.

Two California schools expect to save more than $15 million in energy costs in the next four years.

Without the system, "we wouldn't have been able to enter the [California] market," said Timothy Vail, a vice president of product development at Enron Energy Services. EES is a retail marketing unit of Enron, which has $24 billion in energy-related assets.

Enron, page 17

Pay-per-view for biz news taking off

By Sharon Machlis

WEB-SKEPTICS used to sneer that the only Internet content that people would pay for was pornography. But more and more surfers are shelling out money for online business news that they hope to parlay into more money down the road.

"All of us have had huge run-ups in subscriptions," said Patrick Spain, CEO at Hoover's, Inc. in Austin, Texas. Hoover's online corporate profile site reported that its paid World Wide Web subscriptions have hit 15,000, more than doubling in six months. The site offers up-to-date information and customized searches about stocks and companies.

The year-old TheStreet.com financial news service said its subscription base jumped from 2,000 to 7,000 in the fourth quarter and is growing by 20% per month. The site offers in-depth company, market and fund news.

The leader in fee-based Web financial news, *The Wall Street Journal Interactive Edition*, went from about 150,000 in Novem-

Biz news, page 16

REARVIEW MIRROR

▸ *What Microsoft could learn from* U.S. v. IBM

The IBM antitrust lawsuit of the 1970s was a debilitating exercise in futility. The six-year ordeal produced 974 witnesses, 66 million pages of evidence, 104,000 pages of eye-glazing testimony – then was dropped. Looking back, experts agree it was a huge drain on IBM resources and management attention. Can Microsoft avoid getting bogged down in its own "antitrust Vietnam"? In an interview with senior editor Gary H. Anthes, IBM's chief counsel during that time advises: Settle the case – unless that would be corporate suicide. In Depth, page 63

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Teleweb technology
Corporate call centers get linked to Web sites. Next page

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Netscape puts Java-based Web browser on hold. Page 2

E-MAIL NIRVANA STILL OUT OF REACH
Users thwart IS goal of one integrated system. Page 4

SUN, MICROSOFT IN COURT FIGHT
Bigger battle over Java being fought in marketplace. Pages 8, 10

Hey, don't steal my staff!

By Tim Ouellette and Bob Wallace

NEVADA POWER CO. was nearly left powerless on the IT front when its systems management software vendor, Candle Corp. in Santa Monica, Calif., lured away one of its key staffers.

The Las Vegas utility learned a hard lesson about the competition for scarce information technology resources.

"It really hurt us, particularly because what we essentially did was spend a lot of money training this guy for Candle," said Gerald Verchick, manager of applications enablement and technology. "It was a real beauty of a

Staff, page 88

GMAC's Niraj Patel: His vendors have agreed to alert him before pursuing his staff

NEWSPAPER

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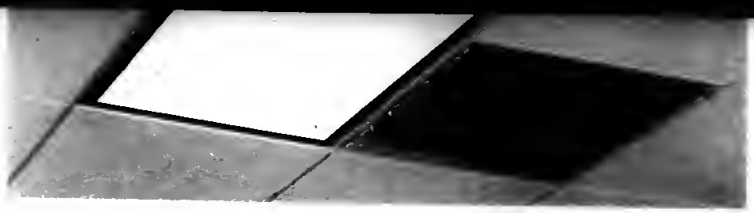

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Digital_Nervous_System:

intelligent evolution

Sandra Johnson found that technical recruiters can do much more for you when you develop a long-term relationship with them. **Managing, page 56**

Sears' Steve Berler posts data warehousing value in external information sources. **Corporate Strategies, page 31**

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Call centers and Web sites cozy up

By Matt Hamblen

IT MAY NOT BE a marriage yet, but some corporate call centers and Web sites are doing some serious dating.

Sales directors and chief information officers are beginning to link the two operations in an effort to improve response to customer queries, and ultimately generate more sales.

The latest technology lets a customer browse a World Wide Web site on a PC at the same time a customer service agent browses the same site. Simultaneously, they can talk over a separate telephone line or an Internet connection to compare products or discuss how they work.

Also, analysts said, some call centers are becoming "communications centers," where agents handle calls as well as electronic mail, faxes and questions from the company Web site.

Products in this emerging area will be shown at Computer Telephony Expo '98 this week in Los Angeles.

"We're growing like crazy, and it's definitely because customers are coming to us through this" technology, said Supreet Manchada, CIO at Logistix, Inc. in Fremont, Calif. The logistics technology company operates a 120-agent call center."

APART BUT NOT SEPARATE

Logistix is testing Web Agent software from Aspect Telecommunications, Inc. in San Jose, Calif. Web Agent synchronizes Web screens viewed by the agent and customer as they talk and even lets either party draw circles around words or pictures for both to see.

That may seem like no big deal, but it helps customers if an agent can explain a complex device, such as a router, while they view a diagram on-screen, Manchada said.

Another important feature for Logistix and other users is the technology's ability to turn the call center into a central point of customer contact. Agents can answer customer inquiries that come in via E-mail, faxes, telephone or the Web site.

At Logistix, agents do all those things plus outbound sales calls, so the company has replaced the name "call center" with "communications center."

"We know by experience that customers who go to our Web site and then call us have a greater propensity to buy than those that just call us," said Peter Schwab, director of shareholder communications at Strong Capital Management, Inc. in Menomonee Falls, Wis. The mutual funds company is testing Web Agent for its 200-person call center.

Forrester Research, Inc. in Cambridge, Mass., has dubbed the Web-to-call center relationship "teleweb."

COURTING WITH CHOICES

"The endgame is to let the customer choose how they want to contact you and to make sure any choice results in consistent interface, so that if a customer calls, the agent knows about the E-mail he just sent," said David Cooperstein, an analyst at Forrester.

Cooperstein said Aspect and WebLine Communications, Inc. in Burlington, Mass., are "neck and neck in setting the pace" for emerging teleweb products, which he described generally as "not ready for prime time."

Other vendors, such as Lucent Technologies, Inc. in Warren, N.J., have provided similar technology for a year. But the products are just starting to attract attention, said analyst Joe Outlaw at Datapro Information Services Group, Inc. in Delran, N.J.

Although some large companies may find linking Web sites and call centers valuable for selling complex products, Outlaw said, a children's toymaker dismissed the idea because its customers aren't likely to use the Web for inquiries. □

RELATED LINKS

For these and related links, go to:
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www.callcentres.com.au/

ITSC Call Center Resources
www.itsc.state.md.us/ITSC/callcenter/callcen.htm

Call Centers: An Introduction to Managing Customer Relationships
www.lucent.com/BusinessWorks/ccs/downloads/barney/callcen.html

UP FRONT

Distant mirror

Many Microsoft watchers are coming to believe that the company no longer faces substantive competition in any of its core markets. But a formidable adversary does still lurk in Washington and state capitals across the country. And what prosecutors and legislators do in their multifront assault of Microsoft may one day outstrip any damage any competitor could inflict.

But Microsoft's legal troubles aren't unprecedented. From 1969 until 1982, IBM lived under antitrust fire that forever changed that company and the computer industry as a whole. As senior editor Gary H. Anthes documents in this week's In Depth feature beginning on page 63, there are many parallels between IBM's struggles in the '70s and the challenges Microsoft faces today.

IBM managed to flourish even as lawsuits rained down, but the beginning of the end of its industry dominance happened during that time. The antitrust suit was a huge drain on money and attention. IBM employed more than 200 lawyers at one point just to combat the government. Its executives were laden with depositions, legal documents and policy manuals. Though the government didn't win the case, IBM under siege became an inwardly focused company, fiercely protective of its secrets and distrustful of outsiders.

Microsoft would do well to study IBM's history.

That paranoia took its toll. IBM came to regard everyone as an adversary just as the PC era was blossoming with its new culture of collaboration. IBM hid its executives from the spotlight. PC makers put theirs on CNN.

Microsoft would do well to study IBM's history. Litigation could extract a huge toll on the company. If it becomes too distracted from its customers and its mission, the fate that befell IBM in the years after its antitrust woes ended wouldn't be out of the question.

Paul Gillin, *Editor*
Internet: *paul_gillin@cw.com*

THE FIFTH WAVE
BY RICH TENNANT

"SHE JUST FOUND OUT SHE'D RATHER BE A JET PILOT THAN A FAIRY PRINCESS, BUT SHE DOESN'T WANT TO GIVE UP THE WARDROBE."

E-mail Rich Tennant at theywave@tiac.net

Java Navigator's future uncertain

By Carol Shwa and Sharon Gaudin

NETSCAPE COMMUNICATIONS Corp.'s decision to put on hold its Pure Java Navigatnr browser, oft-dubbed the Javagator, paints a cloudy picture for the once-promised client, which was targeted primarily at network computers.

Netscape, which has been revisiting its Java strategy as it copes with financial losses, said "on hold" means it will make no public commitments to a ship date, features, performance or platform, said James Hammerly, a Netscape vice president. "We have the project on hold while we talk to our partners," he said.

A joint press release issued last August by Netscape and partner Sun Microsystems, Inc. gave a first-quarter 1998 ship date for the Java Navigator. Hammerly last week wouldn't say whether any Netscape engineers are working on the project, nor would he speculate on the product's future.

A Sun spokeswoman said she didn't know if Sun would send any more developers to help pick up the pace but added, "We're hopeful we can put something together and make something happen." Sun had committed to standardize on the Java browser and include Netscape's Hypertext Markup Language rendering component in its Java Development Kit.

"If the Java alliance were to say, 'This is the standard we will follow,' that would probably be an incentive for Netscape to carry the heavy weight," said Tim Sloane, an analyst at Aberdeen Group, Inc. in Boston.

"I see it as a business-oriented move, not really reflective of Java. Java is moving server-side, and Netscape's made quite a commitment in terms of server-side Java. I don't believe you'll see them back out of that commitment," said analyst Evan Quinn at International Data Corp. in Framingham, Mass.

"To develop Navigator all over again when they can't charge anything for it would be an exercise in futility. Most companies that develop in Java sell the software that results," said analyst Ira Machefsky at Giga Information Group in Santa Clara, Calif.□

Novell surges ahead with GroupWise

By Barb Cole-Gomolski

NOVELL, INC. will announce the next release of its GroupWise messaging and groupware system at the company's Brainshare conference later this month, the company confirmed last week.

The upgrade, code-named Surge, will offer broader IP support, improved scalability and enhanced document management capabilities, said sources familiar with the plan.

Novell declined to comment on the product, which sources said is due by midyear.

On the Internet front, Novell is expected to add support for Secure Multipurpose Internet Mail Extensions (S/MIME), which let users encrypt electronic mail and sign messages with digital signatures. Novell will also add support for the Network News Transport Protocol for hosting Internet discussions.

"Internet standards are important because we are not a homogeneous environment," said Brian Anderson, information technology specialist at Auburn University in Auburn, Ala. The school has 1,500 GroupWise users. Internet protocols make it easier to share information and lower the cost of administration, Anderson said.

Users said Novell also plans to restore several document management features in Surge that were lost when the company made its stand-alone document management system part of GroupWise a few years back. Those include tighter hooks to other applications and the ability to split document libraries and move them en masse.

Although GroupWise is the underdog in the messaging space, analysts said the product still is viable. "GroupWise still has a shot," said Eric Arnum, editor of "The Electronic Mail and Messaging Systems" newsletter in Washington. Arnum said there were about 8.5 million GroupWise users at the end of last year, compared with about 7 million a year earlier. "[GroupWise's] growth is slow but steady," Arnum said.

Lotus Development Corp. Notes' installed base grew from 9.5 million to more than 19 million last year, and the number of Microsoft Corp. Exchange seats shot from 2 million to 9.5 million during the same period.

Several users, including Steve Lopez, an information systems manager at the National Association of Medical Examiners in Philadelphia, said, they are pleased with GroupWise and plan to stick with it.

But a systems specialist at a large oil company in Texas said he is moving several thousand users from GroupWise to Microsoft Corp. Exchange because it has been too difficult to integrate GroupWise with the World Wide Web.□

UPGRADE UPDATE

Enhancements planned for the next upgrade of GroupWise, code-named Surge

- Support for S/MIME encryption standard
- Document management
- Improved scalability

CEOs prep for Senate hearing

▸ *Microsoft, Netscape, Sun vie for spotlight at high-profile event*

By Carol Sliwa

THE SOFTWARE WARS will take center stage in Washington tomorrow when Microsoft's Bill Gates shares the spotlight with his arch nemeses, Netscape Communications Corp.'s Jim Barksdale and Sun Microsystems, Inc.'s Scott McNealy.

All three CEOs have agreed to testify before the Senate Judiciary Committee's hearing on "Market Power and Structural Change in the Software Industry."

And not surprisingly for such a high-profile political event, the behind-the-scenes jockeying for position has been intense, sources said.

"Everyone expects this to be a major, major hearing," said one Senate Judiciary aide. "They're trying to create as soft a landing for their people as possible. I think Microsoft has been trying to talk to everyone they can."

The aide said she began receiving calls two weeks ago from one of Microsoft Corp.'s lobbyists, Preston Gates Ellis & Rouvelas Meeds. Gates' father is a partner of that law firm.

Lobbyists from Sun followed suit.

Gates is scheduled to meet today with several senators, including Judiciary Committee Chairman Orrin Hatch (R-Utah), a noted Microsoft critic whose district is home to rival Novell, Inc.

LET'S MEET

A Microsoft spokesman claimed some meeting requests were initiated by the company and others by senators.

"[Gates] gets to D.C. a couple times a year, and generally there are standing invitations and people he would like to meet with," said Microsoft spokesman Greg Shaw.

A spokeswoman for Hatch said such prehearing meetings aren't unusual.

Barksdale, too, has meetings scheduled with several senators, a Netscape spokeswoman said.

Sun officials couldn't be reached for comment, but one Senate aide said the company also requested a prehearing meeting.

SPREADING THE NEWS

Shaw said tomorrow's hearing will give Gates the opportunity to share the "good news" that the software industry is "astonishingly healthy and vibrant, more so than any other industry in America."

"People are reviewing how the antitrust regulations that applied to Standard Oil and AT&T apply to software," said David Sims, technical manager of information technology at Schlumberger Ltd. in Sugar Land, Texas. "It should be part of an ongoing process: the adaptation of the existing environment to new circumstances." □

The hearing "should provide an important step in our consideration of how antitrust policy could best serve consumers and the long-term health of the software industry and the Internet generally."

SEN. ORRIN HATCH

IBM throws weight behind decision-support bundling

▸ *Vendor aims to make technology less daunting*

By Craig Stedman

IBM LAST WEEK waved the decision-support flag in an effort to become more of a factor in data analysis applications.

The company announced a series of decision-support bundles for various vertical markets and upgrades to decision-support products such as its Intelligent Miner data mining tool and Visual Warehouse data warehousing software.

IBM also said it plans to package online analytical processing (OLAP) technology and market-leading query tools from Business Objects S.A. and Cognos, Inc. with some versions of Visual Warehouse.

The increased focus on vertical bundling puts IBM in the middle of a trend to make complex technology such as data mining less spooky to corporate users, said Brian Murphy, an analyst at The Yankee Group in Boston.

MARKETING MANEUVER

But the announcement "was more of a marketing move than one of moving the technology forward," Murphy said.

IBM is "pretty far down the list of companies that spring to mind" when decision support is the topic, Murphy said.

And the company needs to do a better job of insinuating itself into the good graces of users, he said.

WAREHOUSE WORK

AutoZone, Inc., an automotive parts retail chain in Memphis, is using IBM's DB2 Universal Database to build a 300G-byte data warehouse that users will tap into via front-end tools made by Ottawa-based Cognos.

Michael Embry, lead analyst for the warehousing project, said the built-in links between the Cognos and IBM software could have saved some time for AutoZone, which spent more than six months integrating various tools.

IBM's announcement included a new version of its Decision-Edge customer marketing suite geared to the financial services industry.

Also added were data mining packages for banks and telecommunications companies, plus analysis bundles that are tied to packaged applications from SAP AG and J. D. Edwards & Co. □

TCO tales

Are you looking to reduce the total cost of ownership of your PCs? See how Hallmark Cards' James Miller (pictured) and managers at three other companies reined in their desktop costs.

Managing, page 56

Clinton says no 'net taxes

By Patrick Thibodeau and Matt Hamblen

PRESIDENT CLINTON outlined his views on Internet taxation in a speech in San Francisco Thursday, declaring that "there should be no special breaks for the Internet, but we can't allow unfair taxation to weigh it down and stunt the development of the most promising new economic opportunity in decades."

Earlier, the National Governors Association (NGA) passed a resolution urging Congress to prohibit taxes on Internet access but allow them on Internet commerce across state lines.

Clinton said he supports the Internet Tax Freedom Act, which would impose a moratorium on new Internet taxes. The bill would let states and localities apply existing taxes to online commerce. So a state would get the same tax revenue from someone buying a shirt or a book in person or on the Internet, if that person is in the state.

Critics called the NGA plan a de facto national sales tax.

"It is perhaps the most compelling explanation for why the Internet Tax Freedom Act is needed," said David Seldin, a spokesman for Sen. Ron Wyden (D-Ore.). Wyden is a co-sponsor of the bill, which was designed to prohibit new taxes on the Internet for at least five years. He called the governors' proposal a "mouse tax."

TAXING ISSUE

States are worried they will lose sales tax revenue as more consumers purchase goods and services over the Internet. The tax exemption applied to Internet commerce is the same one that exists for goods sold by mail order: Merchants don't have to collect taxes in states where they don't have a presence, although buyers may still be obligated to pay that tax to their home state.

The Internet Tax Freedom Bill is expected to face a vote in the House next month. □

Corrections

In the article "Agency combines databases to revamp vital forecasts" (CW, Jan. 19), the job cuts mentioned are in the Idaho National Engineering and Environmental Laboratory, which is under the umbrella of the Department of Energy.

E-mail management migraine

▸ *Users try to reduce number of E-mail systems*

By Barb Cole-Gomolski

THE DREAM OF HAVING one E-mail system still eludes most companies, and that isn't likely to change any time soon.

During the past few years, organizations have been trying to reduce their number of electronic-mail systems in order to slash costs and improve the flow of information.

Roadblocks are that it can be difficult to find one system that meets everyone's needs, migrations can get drawn out over years, and far-flung offices may refuse to switch to the new corporate standard.

For instance, Security DBS, a division of Dresser Industries in Dallas, uses Microsoft Corp.'s Exchange, but most of the company's other divisions use Lotus Development Corp.'s CC:Mail and Notes.

Security DBS was a longtime user of Microsoft Mail, so "the next logical step for us was Exchange," said MIS manager Mark Bennett.

The price of such nonconformance is that Security DBS had to purchase additional software so it could trade messages and directory information with the rest of the company.

"The big trouble with multiple E-mail systems is moving messages between them," said John Silliman, director of office products at Aetna/US Healthcare in Bluebell, Pa., which is migrating to Exchange. "That's where your costs start to rise and reliability becomes an issue," he said.

To get around the problem, the health maintenance organization will install Exchange servers and let users choose either the Exchange client, Microsoft's more sophisticated Outlook client or an Internet mail client, Silliman said.

TWO TOO MANY

According to a recent survey of more than 40 information systems professionals by Creative Networks, Inc., a research firm in Palo Alto, Calif., large companies have an average of 2.6 messaging systems in place.

"Maintaining several E-mail systems is extremely expensive, and you don't have a common directory," said Truman Harsha, team leader of the network operations group at the U.S. Department of Agriculture in Fort Collins, Colo. The agency has about 70,000 E-mail users on six systems. Harsha said standardizing on one E-mail package would be "a perfect world" but is unlikely given the department's long-standing policy of letting agencies plan their own software purchases.

"Most organizations are striving to reduce the number of E-mail systems but are not expecting to get to one any time soon," said Mark Levitt, an analyst at International Data Corp. in Framingham, Mass. "The management headache of multiple [E-mail] systems does not appear to carry enough corporate weight to issue a one E-mail system mandate."

Indeed, one large oil company in Texas that is moving to Exchange faces a three-year migration to its new mail system, during which time it will have to maintain Exchange and its legacy Novell, Inc. GroupWise system. An IS manager at the company said top management is unwilling to shell out in one lump sum the estimated $7 million it will cost to fund the migration.

GETTING THERE

Some companies, such as US West Communications, Inc. in Denver, support two messaging systems — one with basic E-mail capabilities and one with more sophisticated groupware options. The telecommunications giant, which once had 15 E-mail systems, is deploying a Netscape Communications Corp. mail client for basic E-mail and installing Notes for users who need groupware and custom applications, according to Barbara Bauer, the company's senior director of corporate systems development.

Similarly, Texas Instruments, Inc. in Plano, Texas, has largely standardized on Internet messaging but is offering departments that want to pay a higher chargeback fee Notes or Exchange. □

Vendors hot for instant messaging

▸ *But customers lukewarm about feature's longevity*

By Barb Cole-Gomolski

VENDORS ARE increasingly bullish on "instant messaging," but many technology managers are skeptical that it will ever take off in corporate America.

Instant messaging — unlike store-and-forward electronic mail — lets users send messages immediately to others who are online.

The technology is appealing because it lets users blast time-sensitive information to a wide audience. But instant messaging products lack standards and have spotty integration with existing E-mail systems, users said.

"I don't see a need for instant messaging," said Chip Perry, MIS director at Pillsbury Co. in Minneapolis. Perry said that if users need to communicate immediately, they can just pick up the telephone.

One systems manager at an automotive company in Detroit said it can take 45 minutes to get an E-mail message through the company's network, so something faster would be nice. But "we're more interested in speeding up our E-mail delivery than investing in another infrastructure," he said.

Instant messaging is already a hit with consumers, such as users of America Online, Inc.'s Instant Messenger. But the leading E-mail vendors are adding instant messaging to their enterprise offerings.

INSTANT KARMA

Benefits and drawbacks of instant messaging:

Pros:	Cons:
Immediate communication	Interoperability among instant messaging products not ensured
Users can tell when co-workers or clients are online	Some products may not work behind a firewall
More convenient than E-mail	May not be tightly integrated with corporate E-mail system

Microsoft Corp. last week purchased Flash Communications, Inc., a Boston-based start-up whose Flash instant messaging software will be in Exchange by next year.

Lotus Development Corp. is committed to instant messaging, too, but the company wouldn't say when such messaging will be added to Domino. Ichat Software, Inc. and Activerse, Inc., both in Austin, Texas, are also players in this niche.

TOUGH CROWD

"I still have to be sold on [instant messaging's] relevance in the workplace," said Eric Arnum, editor of the "Electronic Mail and Messaging Systems" newsletter in Washington.

"I have this vision of people sitting in an office and looking busy by typing away on their computers, but everyone's chatting about basketball or something," he said.

Instant messaging would be appropriate "if it's 11:55 a.m., and you want to know if someone feels like lunch," said David Ferris, president of Ferris Research, Inc. in San Francisco.

He said Microsoft's purchase of Flash helps validate the instant messaging market.

POSSIBLE ACCEPTANCE

But "the most significant development will be if and when Microsoft provides easy-to-use [application programming interfaces] to instant messaging. Then companies can build valuable custom applications with it," Ferris said.

Indeed, blending instant messaging into business applications may be the saving grace for this technology in large companies, users said.

"I could see the applicability of this in our claims area," said Therese Lawler, E-mail systems manager at American Family Insurance in Madison, Wis.

Field workers who are checking claims need to be able to quickly convey information back to the home office, she said. "But I'm not incredibly interested in this as a stand-alone application," Lawler said. □

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IBM mainframe gains appeal

▸ *But staffing, Y2K issues delay implementations*

By Jaikumar Vijayan
ANAHEIM, CALIF.

IBM'S MAINFRAME makeover continues to gain momentum.

But year 2000 conversions, staffing woes and a tendency by bosses to dismiss mainframes as obsolete are making it hard for some IBM customers to keep pace.

IBM last week unveiled a version of the OS/390 operating system that features enhanced security and networking capabilities aimed at letting users host large electronic-commerce applications on their mainframes (see story, page 53).

Office Depot will exploit the enhanced TCP/IP support to more tightly link its mainframe cluster with the corporate network.
– Vick Mudrick, vice president

SMALLER, FASTER

Over the past few years, the systems have gotten smaller, faster and cheaper as a result of technologies such as IBM's CMOS processors and Parallel Sysplex clustering.

And support for large packaged products such as SAP AG's R/3, World Wide Web technologies and communications protocols such as TCP/IP have widened the appeal.

Those moves are steps in the right direction for IBM and its customers, said several users at Share, IBM's user group conference, held here last week.

But many managers view mainframes as dead-end technology, so they are reluctant to implement the new functionality, said a technical analyst at a Midwest automotive company, who asked not to be named.

Reynolds Metal Co. in Richmond, Va., uses some of the new Web features to make legacy data accessible to more users via the company's intranet.

"A lot of this is new territory for us," said Chuck Humphreys, manager of mainframe systems technology at Reynolds. The company is exploring the idea of building an extranet for linking up with its business partners that use the same technology.

But "we don't anticipate being there for a long time," he said. "A lot of what is available now is ahead of what we need."

Likewise, Office Depot, Inc. in Delray Beach, Fla., has no immediate plans to use the Web functionality integrated in the latest version of OS/390.

But the company will exploit the enhanced TCP/IP support to more tightly link its mainframe cluster with the corporate network, said Vick Mudrick, vice president of technical services.

"The real issue is one of finding people to run existing applications," said another administrator in a large California university who also asked not to be named.

STAFF EROSION

In the past few years, the university has seen a gradual erosion in the number of staffers handling its mainframes. At the same time, more than half of the huge applications scheduled to make a multimillion-dollar move to client/server platforms a few years ago have remained right where they are.

Yet "we've not had one new hire in the mainframe space for the last 10 years," the administrator said.

It is the year 2000 conversion issue — and the staffing requirements that go with it — that is forestalling any new mainframe development activity at the Library of Congress in Washington, according to J. Carl Saunders, a senior systems analyst at the library.

He welcomed IBM's move to make its mainframes more open and hooked into the Web. But for the moment at least, the library has no plans to even move to the latest Web-enhanced versions of the operating system, Saunders said. □

MAINFRAME MAKEOVER

IBM enhanced the S/390 platform by:

- Lowering entry costs
- Integrating Web server capabilities
- Enhancing security
- Scaling down footprint
- Speeding up processors
- Creating support for packaged applications

Recycled PCs pose Y2K challenge

▸ *BIOS upgrades help, but time, labor boost cost of fixes*

By April Jacobs

PC MANAGERS are turning into a millennium desktop posse, spending a lot more time and money than they had planned to get their PCs ready for the year 2000, in large part because of chip and BIOS issues.

Ironically, a big burr under their saddle involves having to test recycled PCs, which had been billed as cost-saving thin clients.

Recycled PCs that masquerade as thin clients are typically older PCs, such as 486s. They usually are paired with third-party software such as Fort Lauderdale, Fla.-based Citrix Systems, Inc.'s WinFrame software to run new applications from a server.

But those machines, in many cases, need fixing.

Ed Bianco, chief information officer at Lowell General Hospital in Lowell, Mass., which has several thousand PCs, had planned to recycle 400 older PCs into thin clients. But year 2000 issues, such as outdated BIOS, may force him to buy new PCs instead, at a cost of $300,000.

Even more surprising is that some new PCs are popping up as problems despite expectations that they would be year 2000-compliant, according to Dinesh Rawlley, year 2000 program manager at Mars, Inc. in Atlanta.

New PCs may cost the hospital $300,000
– Ed Bianco
Lowell General

Rawlley said the company expects to spend $1 million on desktop-related year 2000 issues even though it hadn't expected PCs to be such a problem. He said he was surprised when he tested a batch of Pentium-based machines he received about six months ago and found that half of them needed an upgrade to make the chips work properly.

Many PCs may be fixed through BIOS upgrades, which can be obtained for free from most vendors. It is the time and labor involved in testing and upgrading that irks PC managers.

CONSERVATIVE TACK

Dave Bettinger, who works at the year 2000 program office at L. L. Bean, Inc. in Freeport, Maine, said his company, which has several thousand desktop machines, has taken a conservative approach to testing: no reliance on vendor assurances (CW, Feb. 23).

"There is still a lot of complacency going around with people thinking that because they just purchased or leased a brand-new piece of equipment, they won't have a problem. And that's not true," he said. He noted that older batches of chips can get mixed up with new ones, making some new machines at risk for year 2000 problems.

Desktop makers have been paying attention. PC makers such as Compaq Computer Corp. began shipping desktops that are guaranteed to be year 2000-compliant just this past summer.

However, experts said the biggest PC issues to worry about are in older chips, such as 386, 486 and Pentium machines issued up until 1996 — many of which are still floating around corporations.

Over the past year, some vendors have set up year 2000 sections on their World Wide Web sites that dole out advice and fixes users should heed (see story below).

Priority Pharmacy, Inc. in San Diego plans to upgrade its Dell Computer Corp. desktops using the vendor patch and will have to replace only three PCs by 2000, said John Williams, manager of information systems. □

Dial up for vendor aid

Users overwhelmed by desktop year 2000 issues can get help from independent vendors that sell test-and-fix programs, as well as their own software and hardware providers.

For example, Viasoft, Inc. in Phoenix, a vendor well-known in the mainframe year 2000 world, last week said it will also provide software to test and troubleshoot desktop systems. The company charges about $155 per PC for OnMark 2000, software that takes inventory of PCs and software and assesses their at-risk level.

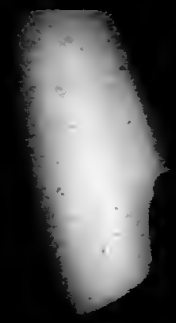
Other vendors, such as Client Server Technologies, Inc. in Atlanta, provide programs that let users test a PC's ability to handle the year 2000 date change.

But users can also turn to their own vendors.

For instance, the top three PC makers have dedicated areas of their World Wide Web sites to year 2000 issues: IBM (*www.ibm.com/year2000*), Compaq (*www.compaq.com/year2000*) and Dell (*www.dell.com/year2000*).

They all provide overviews of the year 2000 problem as it relates to their own desktop hardware and some fixes for older equipment.

IBM, for example, advises customers that any PC model purchased before 1996 must have its clock reset manually after the new century. Dell offers a free BIOS upgrade for customers, called a program patch, that will solve issues for some PCs listed on its Web site. — April Jacobs



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FRANKLY SPEAKING

ITAA strikes (out) again

BY FRANK HAYES

READY TO HAVE your intelligence insulted — again? Here's the Information Technology Association of America's (ITAA) new slogan for getting more people into the business, in the face of a growing IT labor crunch:

"Anyone can do it. All you need is a willingness to learn."

Fancy that. Here we thought skills and aptitude and experience might have something to do with writing useful software and managing networks effectively and creating systems that make businesses more successful.

All you need? A willingness to learn is just the beginning. IS shops and high-tech vendors need business expertise, a solid grasp of how to apply new technologies and, most of all, the vision to understand what users and the business require.

The big technology companies that make up the ITAA know that, of course. Not one of them would hire someone whose only qualification is a willingness to learn. In fact, last week, they went to Congress, begging for help in finding top-flight IT workers.

Short-term "guest workers" won't ease IS labor crunch.

But these companies, including Microsoft, Sun and Texas Instruments, weren't looking for just anyone willing to learn. They asked Congress to increase the number of foreign high-tech "guest workers" — so-called H-1B workers. The ITAA wants the government to ease the IT labor shortage by raising the current limit from 65,000 H-1B workers to as many as 100,000. That's a bad idea — and even more insulting to IT professionals' intelligence than the "anyone can do it" slogan.

For one thing, it assumes we can't count. The ITAA itself calculates we're 346,000 IT workers short already. Throwing in 35,000 more guest workers is just a drop in the bucket — still leaving more than 300,000 empty seats. Some help, huh?

For another, it assumes we can't see the difference between these guest workers and immigrants.

Real immigrants — such as Intel boss Andrew Grove and Borland founder Philippe Kahn — stay in the U.S. permanently. They get a shot at the American dream and a chance to make a long-term difference for all of us by creating new products, new companies and new jobs.

But guest workers get temporary visas that last only a few years. After that, they're required by law to leave the country. It's exactly the same law that lets Mexican farm workers into the U.S. just long enough to pick crops, then ships them back across the border.

The IT labor crunch is real. The U.S. Department of Commerce says we'll need 1.3 million new IT professionals in the next decade — and we're not producing them fast enough. Desperate companies steal workers from their competitors, who steal them back. That's why we've got 25% to 35% turnover in corporate IS shops.

This isn't just a shortage of warm bodies. It's a crisis in our ability to build loyalty and retain our best people.

Short-term guest workers aren't the solution — just a highly visible symptom of the problem.

Still, if the ITAA really wants more foreign IT workers, here's a modest proposal: Lobby to let them come for good, as permanent immigrants.

Will some of those green-carders compete with Americans for IT jobs? Sure. Politicians concerned about fallout from that can link hiring new IT immigrants with retraining and hiring older IT professionals, for example. But more important, if IT immigrants are here for the long haul, they will have a chance to help create jobs, not just fill them — to add business value, not just keep their heads down until their visas run out.

They'll have a stake in everybody's future. And that's not an insult to anybody.□

Hayes is Computerworld*'s West Coast bureau chief. His Internet address is frank_hayes@cw.com.*

SHORTS

HP wins export license

Hewlett-Packard Co. has won approval to export a hardware-based strong encryption scheme called VerSecure. Several other vendors, including IBM and Microsoft Corp., pledged their support for the technology. Products should be available within months, according to HP CEO Lewis Platt. VerSecure consists of a hardware cryptographic unit — likely to be implemented first in a plug-in board — and a "security domain authority server." IBM said it is working to allow its key recovery and encryption products to use the VerSecure architecture.

Contest highlights programmers

Companies hungry for programming talent should have descended on Atlanta this past weekend. Fifty-four student teams from around the world competed there in the Association for Computing Machinery's International Collegiate Programming Contest. Contestants used IBM's VisualAge for C++ and VisualAge for Smalltalk, and Borland International, Inc.'s Turbo Pascal for development.

CA/CSC struggle continues

Computer Sciences Corp. (CSC) took a two-pronged approach to Computer Associates International, Inc.'s hostile takeover attempt last week. First, CSC filed lawsuit in California, complaining of "unfair, unlawful and fraudulent business acts" by CA. CSC filed its official response to CA's cash offer — valued at more than $9 billion — with the Securities and Exchange Commission (SEC), seeking protective bylaw changes. But CA gained ground in its suit to block those bylaw changes, which allegedly strip the rights of CSC shareholders to remove directors who oppose the offer. The judge in Nevada, where CSC is incorporated, advanced the case to a hearing on March 16. CSC's board was scheduled to meet Friday to discuss CA's offer and prepare an amended response for the SEC, which would be announced today.

Thrifts, credit unions face 2000

Senators Bob Bennett (R-Utah) and Chris Dodd (D-Conn.) have introduced legislation that if passed would increase the regulatory authority of the Office of Thrift Supervision and the National Credit Union Administration to examine the year 2000 efforts of thrifts and credit unions. The bill also requires the federal financial regulatory agencies to hold seminars on the implications of the year 2000 problem.

Sun woos NT, Unix users

Sun Microsystems, Inc. has launched a limited-time trade-in program under which Windows NT and Unix customers will receive up to 70% off package pricing if they upgrade to Sun's Solaris environment. Businesses also will get access to the Solaris Solve World Wide Web site that provides product downloads, installation and technical information. The program is available through March 31.

Haliburton outsources to IBM

Haliburton Co. has awarded IBM Global Services a seven-year outsourcing contract. Under the agreement, IBM will provide the Dallas-based oil services company with Internet Protocol-based wide-area network management services, service desk support, LAN server management and electronic-mail administration for more than 26,000 Haliburton employees worldwide. Financial terms of the agreement weren't disclosed.

Java logo suit

In a pretrial hearing, a federal judge in San Jose, Calif., has taken under advisement Sun Microsystems, Inc.'s efforts to force rival Microsoft Corp. to pull its official Java logo. Sun's breach of contract suit against Microsoft (see story, page 10), a Java licensee, claims that Microsoft's Java implementation in its Internet Explorer 4.0 World Wide Web browser doesn't meet the terms of the agreement. Microsoft countersued, alleging that Sun didn't deliver promised Java technology. The court didn't set a deadline for rendering a decision.

SHORT TAKES **Apple Computer, Inc.** has pulled the plug on its Newton operating system, as part of its decision to focus all its software development on the Macintosh OS, the Cupertino, Calif., company announced last week. Newton OS-based products, such as the MessagePad 2100, also will be discontinued. . . . **Commonwealth Energy System** has signed a multiyear information technology services agreement with IBM to provide the Cambridge, Mass.-based utility holding company with data center management, help desk operations, desktop support, application maintenance and voice and data communications management. Financial terms weren't disclosed. . . . **Adobe Systems, Inc.** has added user forums to its Web site (*www.adobe.com*) previously available only to users of private online services. Customers had requested an alternative to the private online services that require additional fees to access. . . . **State of the Art, Inc.** said its MAS 90 accounting software has successfully passed a year 2000 audit. . . . **HP** agreed to sell off a pair of data warehousing software packages to **Platinum Technology, Inc.** The price wasn't disclosed. HP will continue to sell the packages as part of warehousing bundles.

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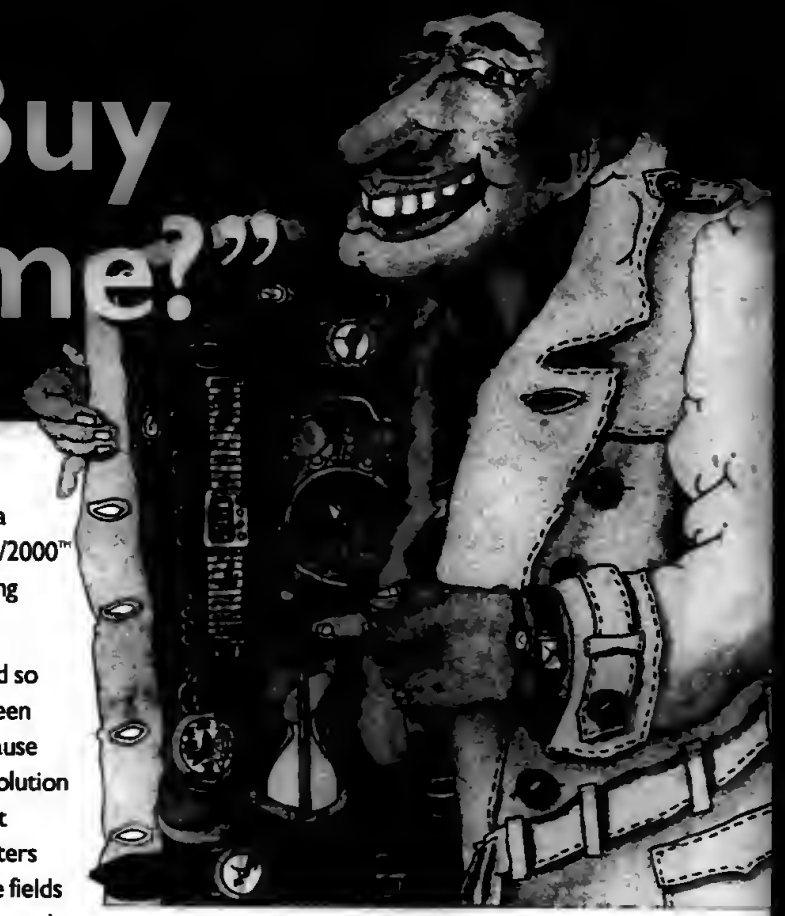

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Microsoft, Sun battle on two fronts

By Sharon Gaudin

MICROSOFT CORP. and Sun Microsystems, Inc. brought their dispute over Java to the courtroom last week, but both companies know the real battleground is in the technology arena.

And users are expected to reap the benefits.

"I certainly think we could do without the haggling, but I expect that the competition is going to be wonderful for me," said Guy Cobb, operations manager at First Tennessee National Corp. in Memphis. "I expect everyone will benefit in the technology from the two going at each other's throats."

Sun went to court last week to stop Microsoft from using the Java logo; the broader suit over whether Microsoft violated its Java license is still pending.

The marketplace battle centers on which company will have the most popular virtual machine and which company will have the most popular application development tool.

Probably most important is the question of whether developers will follow Microsoft's lead and build Java-based Windows applications, or whether they will build cross-platform applications and challenge Microsoft's Windows reign.

"Microsoft has decided to tailor Java to work better on Windows, and by doing that it will hurt the whole platform-independent premise. That definitely is a threat to Java," said Colin Mahony, an analyst at The Yankee Group in Boston. "The question is, Will developers follow them down that road?"

They won't, if Sun has anything to say about it.

Because Microsoft currently has the fastest Java Virtual Machine and the most popular development tool, Visual J++, Sun executives are speeding along their technology development.

"This is good. Sun is learning how to play with the big boys."

– Brian McGuire, Econometrics, Inc.

Gina Centoni, group product manager for Sun's Java platform, said Sun will release a new just-in-time compiler in a couple of weeks, called Sun's Java Virtual Machine, that is as fast as Microsoft's.

And she added that this summer's planned release of the Hot Spot Virtual Machine is expected to make Java, which has been plagued by its lack of speed, run as fast as C++ native code.

"This is good. Sun is learning how to play with the big boys," said Brian McGuire, director of Internet administration at Econometrics, Inc., a Chicago-based market research firm.

"Sun knows it only has one shot at this, and they're doing pretty well, so far. They're getting good products out there, and they're teaming up with all these other companies," he said.

Microsoft's position is that Java is a great language for building Windows applications.

Microsoft is debuting Java classes for its Active Data Objects database at the end of this quarter. The classes were designed to give developers easier access to the high-level database interface. And Microsoft is adding Java classes to the upcoming Windows NT 5.0 to help Java developers access the NT directory.

Many observers said the teaming is keeping Sun in the game. Sun is partnering with IBM, Oracle Corp. and Netscape Communications Corp.

Oracle and Sun are working on Java technology for network computers. Netscape is working with Sun on a Java-based World Wide Web browser. And Sun and IBM are working together to build JavaBeans and software that will manage Java applications. □

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Frustrated networking pros say efforts not appreciated

▸ *Good pay doesn't compensate for projects' invisibility in corporations*

By Bob Wallace

ALTHOUGH A NEW STUDY said they are paid well, workers with highly sought-after networking skills said they are frustrated in their jobs because their companies don't understand the importance of their efforts.

"It's not really understood here that networks are business-critical," said Trey Layton, global infrastructure manager at camera kingpin Eastman-Kodak Co. in Rochester, N.Y. "It's the software developers who are perceived as making the products of the future."

"People can't see the network infrastructure," said Keith Henning, senior network analyst at The Quaker Oats Co. in Chicago. "They're only aware of it if something happens and it goes away for a while."

A network designer shares Henning's view.

"Management doesn't understand the hoops we regularly have to jump through just to keep things running," said the staffer, who works at a California-based aerospace company and requested anonymity. "Our desktop and software development teams enjoy much higher visibility with management."

> 'Meaningful projects have kept my staff happy
>
> Steve Lopez, National Board of Medical Examiners

"Networking staff are often seen as the people that just pull cable," said Eric Landwehr, a network operations designer at financial services firm Sanford & Bernstein Co. in New York.

OH, THE IRONY

Information systems consultants find that especially ironic.

"Although Web pages and electronic commerce are on the front burner in the eyes of management, it's the networking people that put the foundation in place for these business-critical projects," said Robert A. Zawacki, a staffing expert and professor emeritus at the University of Colorado. "They are the real stars." However, he said the lack of recognition creates job dissatisfaction.

Landwehr advises his peers to go on the offensive.

"You need to make your work visible, which can be accomplished by being more vocal about your presence and what you do. Our MIS manager understands the aggravation we go through and knows what goes on in the networking department," he said.

Whit Gregg, Landwehr's boss and IS manager at Sanford & Bernstein, offered advice for other MIS managers.

"It's important for managers to be involved in what their staff is working on," he said. "We're a company that thinks that technology is an important component in our business plan. So it's just a matter of me valuing each of my staff as people."

"My staff knows I come from the trenches and understand their frustrations," echoed Steve Lopez, a network manager at the National Board of Medical Examiners in Philadelphia. "What I do is keep them busy with interesting projects that come with good training. So far, meaningful projects have kept my staff happy. And I shoulder any recognition problems."

It may not be enough to put networking staff on projects that involve cutting-edge products and technologies, Lopez said. "They're enamored of technology, but you have to make sure the projects are meaningful, because only meaningful projects will keep them content," he said. Meaningful projects are those that can affect the way the network is run, Lopez said.

Another strategy is to give staff access to leading-edge products and technologies to make sure they have the opportunity to expand their skills.

"We let our staff work with fiber optics and virtual networking," said James Wiedel, a network manager at the University of Southern California in Los Angeles. "It's not really to keep them busy; it's to let them gain valuable experience in important areas. These are considered benefits that you can't really put a price tag on."

The good news is networking staffers are much in demand.

A *Computerworld* survey last fall asked 223 information technology hiring managers the three skills most difficult to find in their recruiting efforts. Networking tied with Unix for third among 26 skill areas, behind Oracle and Cobol.

Staffing firms are waiting anxiously to place unhappy networking professionals who want to switch jobs.

"There's definitely heavy demand for people with all levels of networking skills," said Len McCormack, CEO at B&M Associates, a placement agency in Woburn, Mass. "I'd be surprised if staffing firms had any problem placing networking professionals."□

HOT NETWORK SKILLS

IT hiring managers cite the following high-demand skills as the hardest to find:

Oracle (database)	14%
Cobol	10%
Unix	9%
Networking	9%
Windows NT Server	8%
Database/relational database skills	7%
Windows NT	6%
AS/400	6%
Network management	6%

Base: 223 IS hiring managers; multiple responses allowed

Source: *Computerworld* 1997 Annual Skills Survey, November 1997

Hot skills pay off

Network staffers may disagree, but a new salary survey demonstrates that they are paid roughly the same as other IS workers and can boost their pay substantially by learning hot skills.

For example, a network administrator with "one or more specific technology skills" received $53,700 last year, a database analyst pulled in $51,546, and a senior programmer/analyst earned $54,300, according to the survey of 127 companies. The poll was conducted by Hay Group, an IS management and human resources consultancy in Philadelphia. Hay Group surveyed large U.S.-based companies in the financial, chemical, insurance, pharmaceutical and other industries.

In general, IS staffers with so-called hot skills make the big money. For example, network administrators with frame-relay skills made $61,900. Those with more in-demand Cisco Systems, Inc. equipment skills made $62,000, said Linda Pittenger, Hay Group's vice president and managing director of IT consulting. "Staffs need to be in touch with what's hot for their job title," she said.

Database analysts with IBM DB2 skills made $59,900, while those with expertise in Oracle Corp. technology made $60,800, according to the survey. Senior programmer/analysts with SAP AG module skills made $69,322.

But some staffers with networking skills believe that non-networking IS workers and IS staffs at other firms are better compensated, according to a World Wide Web-based survey conducted by International Services, Inc., a Sunnyvale, Calif., network integration and services firm.

Nearly 40% of the 202 survey participants said they aren't fairly paid compared with others in their organization. Only 45% said their compensation compares favorably with the market.

"If you talk to anyone in IS, they are going to say they are underpaid in some way," Pittenger said.

— Bob Wallace

GAO report slams fed's IT spending

By Patrick Thibodeau

THE U.S. GOVERNMENT'S investments in information technology have often failed to deliver better services at lower cost, the General Accounting Office says in a new report.

During the past six years, U.S. agencies have spent $145 billion to develop and maintain systems that promised to give agencies the ability to re-engineer businesses processes to improve operations. But the results "have often been disappointing," according to the report.

"Failure of any one of these efforts would represent a double loss: first, a loss of investment capital spent in developing the system; second, an opportunity cost by not achieving the desired improvement in operational efficiency or mission capability," the GAO said.

The GAO singles out, in particular, the efforts of the Internal Revenue Service and the Federal Aviation Administration, whose much criticized systems efforts are considered at "high risk."

SLAMS APLENTY

Other projects on that list include the U.S. Department of Defense's corporate information management initiative and the National Weather Service's modernization project. But the GAO also slams a long list of other federal computer projects, such as a $2.6 billion project by the U.S. Department of Agriculture (USDA).

The USDA has been developing a network of 2,500 "one-stop" service centers. But the GAO said the project is being managed as a vehicle for acquiring new technology, rather than as a true opportunity to better serve farm customers.

Complicating this is the year 2000 problem, which is taking precedence in funding, the GAO said. The White House Office of Management and Budget "is now presuming that information technology investments would not be funded for the next fiscal year unless they are directly related to fixing the year 2000 problem," the report said.

Many federal agencies "are having real difficulties" getting year 2000 repairs done in time, the GAO said.□

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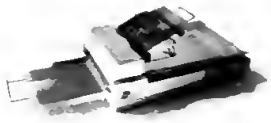

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Want to prevent break-ins? Just ask a hacker

▸ *Vendors use them to find product flaws*

By Laura DiDio

COMPUTER SECURITY, like politics, makes strange bedfellows.

Hacker Web pages that contain detailed lists and instructions on how to crack major operating systems such as Windows NT, NetWare and Unix are fast proliferating, leaving the vendor community hard-pressed to keep abreast of new hacking methods.

Vendors, including Microsoft Corp. and Novell, Inc., have not only beefed up their internal security departments with more engineers and testers, but they also are monitoring dozens of hacker World Wide Web sites that have links to hundreds or more of security, or insecurity, sites. And in many cases, they are in touch with the hackers themselves.

BENEFITS OF HACKER SITES

Vendors and users alike find the sites helpful.

"These sites serve a useful purpose," said Ed Ehrgott, director of information systems at Charles Schwab & Co. in San Francisco. "I consider them one more weapon in the fight to keep my networks secure. If the vendors are working with them, so much the better."

Two of the more celebrated "white hat" helpful hacker sites are *www.10pht.com* and *www.nmrc.org*.

White hat-type hackers distinguish themselves from their cracker brethren because their attempts to find flaws in software are strictly for informational purposes. The 10pht site is operated by "Mudge" and purports to offer users all the ins and outs of hacking operating systems as well as a tool called 10phtcrack, which helps defend specifically against password attacks.

Hacker Simple Nomad's Web page details security holes in network operating systems

Another white hat hacker, calling himself Simple Nomad, runs *www.nmrc.org*. It includes sections that detail the "Insecurities and Securities" of the major network operating systems — including a hackers' tool kit called Pandora that can break in to Novell Directory Services (NDS).

With so much information on its network operating systems readily available, Microsoft is working with the hacker community to learn about potential security flaws in its products and to develop fixes before malicious hackers or crackers can do any real damage.

"This makes perfect sense," said Bruce Murphy, a partner at Coopers & Lybrand LLP's computer security service in Parsippany, N.J. "The concept of closed, proprietary networks is no longer valid. Security is about risk reduction, not risk prevention."

Karan Khanna, a Microsoft product manager in charge of Windows NT security, said that after three security flaws in Internet Explorer were exposed in the same week last summer, Microsoft contacted 10pht's Mudge.

"He's extremely helpful; 10pht informs us of any security holes [we might have missed]. That way, we can post a hot fix to customers *before* a potential hole becomes public knowledge," Khanna said.

Novell hasn't officially been as active in approaching hackers, though Samm DiStasio, a NetWare product marketing manager, said he has exchanged electronic mail with Simple Nomad.

"He warned us about the Pandora hackers' tool kit. And his NetWare Hack FAQs give us another forum to tell users what they need to do to protect themselves," DiStasio said.

Novell followed suit, posting many of the same details on how to resolve known NetWare and NDS security breaches on its own Web page. Gary Hein, a Novell corporate strategist, said the best defense to secure NDS from the Pandora hack is to physically restrict access to the NetWare server.

"Thank God for Simple Nomad," said an MIS manager at a longtime Novell shop in the Southwest who requested anonymity.

"The last thing I need is to have someone hack into my NDS tree that contains all of the information about my network and users in one central place," the MIS manager said. □

Cyberattack prompts DOD to boost security

By Laura DiDio

THE FBI AND the Secret Service are tracking the hackers who successfully invaded nonclassified Department of Defense computers during two weeks of what Pentagon officials called "fairly heavy cyberattacks."

The unidentified hackers penetrated nonclassified military computers containing personnel and payroll records, said John Hamre, deputy secretary of defense, in a prepared statement following a press conference in Washington last week.

In response to this latest incident, Hamre said, the government will begin deploying firewalls around its nonclassified systems. He added that the Pentagon is looking into developing a computer forensics capability so it can investigate computer attacks.

"I think this was, more than anything, a serious wake-up call," Hamre said.

He described the attacks as "systematic and moderately sophisticated" and said they had the appearance of a game — most likely perpetrated by a few individuals.

Hamre emphasized that thus far none of the Defense Department's classified systems has been penetrated, nor have hackers been able to get past the firewalls to the agency's secure systems.

He also said the Defense Department saw no evidence linking the break-in to recent events concerning Iraq.

But computer security experts said the U.S. would have to consider "information warfare as plausible if not likely" in today's world. □

@Computerworld senior writer Patrick Thibodeau contributed to this story.

Users wary after Sybase reorganizes

▸ *Questions raised about company's stability, ability to attract customers*

By Craig Stedman

SYBASE, INC. users were looking at a whole lot of uncertainty last week after the struggling database vendor laid off 600 workers and announced dual CEOs.

Emeryville, Calif.-based Sybase's ability to pull new customers into the fold has been a big question mark for nearly two years. Now, the layoffs, the naming of Sybase's top two executives as co-CEOs and a plan to focus marketing on a trio of application areas are raising new questions for the installed user base.

Terence Light, manager of systems development at United Grain Growers Ltd. in Winnipeg, Manitoba, met with Sybase Canada executives at a seminar after the 11% workforce cut was announced. But their answers weren't entirely reassuring, Light said.

"To me, there was obvious recovery being made [last year]," Light said. "But this is a setback. It's a little more turmoil inside Sybase that does give me some concern."

Sybase President John Chen is now co-CEO with Chairman Mitchell Kertzman

Sybase warned that layoffs were on the way after discovering in January that its Japanese subsidiary had improperly booked more than $60 million of revenue last year [CW, Jan 26].

The layoffs were followed by a shift of all operating responsibility to John Chen, Sybase's president and now joint CEO with Chairman Mitchell Kertzman. Kertzman said he plans to eventually become "an active executive chairman in the Lee Iacocca vein," focusing on external relations while Chen runs the show internally.

A short-term departure by Kertzman "would definitely keep me up at night," said Jim DiLeo, senior vice president of worldwide information technology at The MacManus Group, a New York-based advertising and public relations firm. Kertzman "has been one of my fundamental comfort factors" during Sybase's two-year stretch of turbulent times, he said.

GOOD MOVE?

Brent Sanderson, information technology manager at the state of Utah's finance division in Salt Lake City, gave Sybase credit for "stepping up and doing what they needed to do" on the layoff front. And the sales and support workers on his account "seem to be intact, so I think I'm all right," he said.

But it is too early to judge how the cuts will affect Sybase as a whole, Sanderson said. He said he hopes Sybase won't lose sight of its core transaction processing capabilities as resources get targeted at data warehousing, the Internet and mobile computing. "It's good for Sybase to focus more. I just want them to focus on things that are important to me," Sanderson said.

Justin Tozer, an advisory engineer at an Idaho Falls, Idaho-based environmental engineering lab that Lockheed Martin Corp. runs for the U.S. Department of Energy, said he still has confidence in Sybase.

But Tozer added that the rise of packaged applications and cut-rate Windows NT databases has changed the rules of the game for vendors such as Sybase. "The days where you made a million dollars on each database sale are gone," he said. "And those who can't adapt to the new market are going to have problems." □

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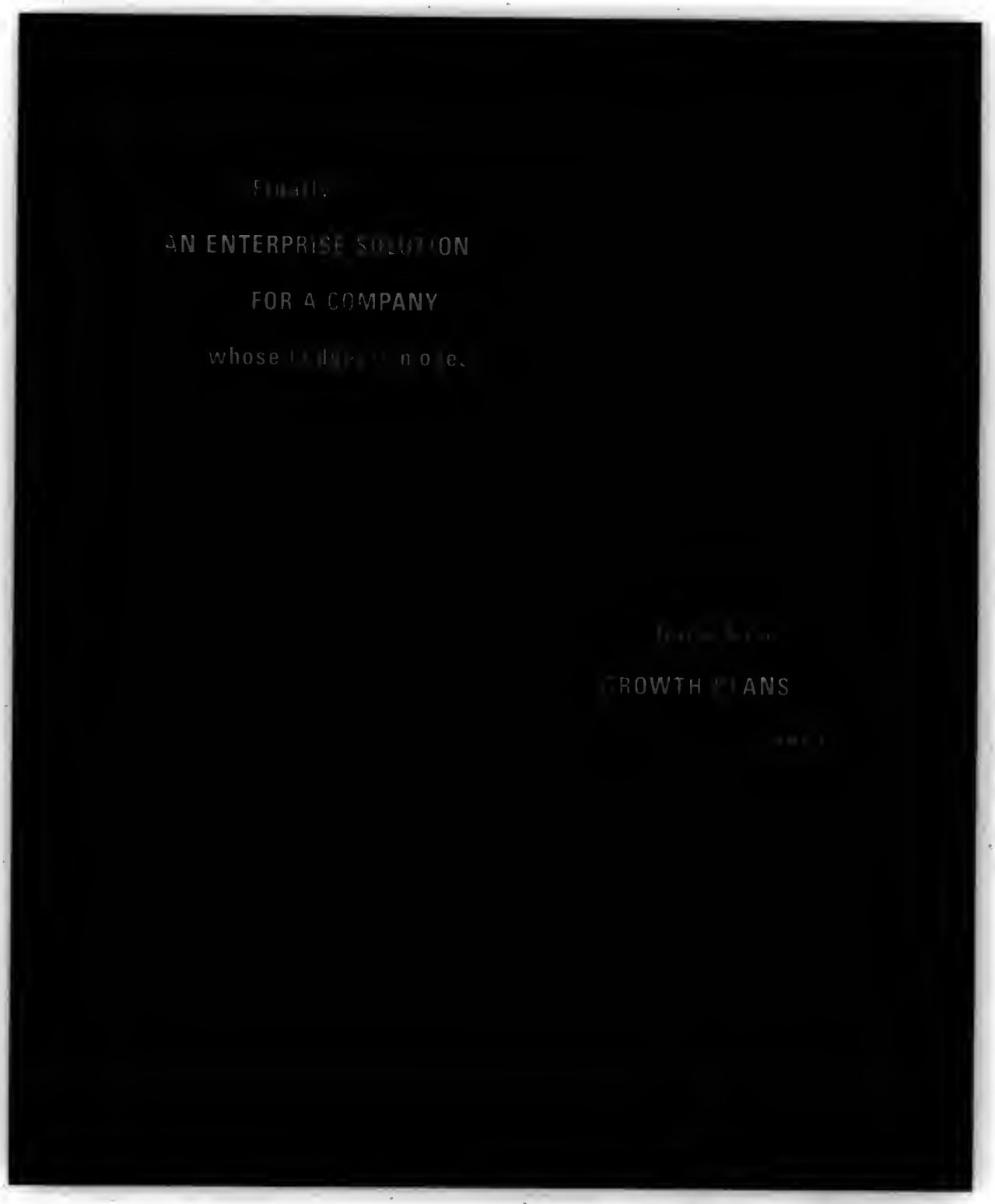

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Business news sells on 'net

CONTINUED FROM COVER 1

ber to 170,000 two months later. "We're having a very good '98," said business director Tom Baker.

Observers said a maturing Web environment combined with a bull-market-induced fascination with all things monetary has helped spark the rise in financial subscribers.

"It depends on the [information] category," said Patrick Keane, an analyst at Jupiter Communications, Inc. in New York. For financial news, he said, "there's more of an inclination to pay."

IT'LL COST YOU

Several new players in the market are investing millions. Standard & Poor's (S&P) launched its S&P Personal Wealth (*www.personalwealth.com*) site in January. It offers commentary, analysis, research, personalized alerts and investment recommendations for $9.95 per month.

"There is a lot of information being provided for free" on the Internet, said John Fitzgerald, president of S&P's consumer markets division.

The S&P consumer site will have some free content, as well. But company officials said the site's premium information will prove useful enough to warrant the cost.

Many major newspapers that include business news, such as *The New York Times* and *The Washington Post*, offer free news online, although an increasing number of papers charge for articles in their archives.

Once software testing issues are ironed out, *BusinessWeek* magazine will start charging to access much of its site, probably within a few weeks. Only paying subscribers will be able to tap in to the current week's issue, although other content, such as daily business news highlights, will remain free.

Subscribers to the print edition of *BusinessWeek* can use the Web site for free. Otherwise, the annual cost is $39.95 for Web-only access and $42.95 for both the Web site and print magazine.

"We always intended for this to be a fee-paid site. The question was when," said David Smith, general manager of BusinessWeek Online. "Quality editorial is costly to produce. We are trying to handle that through multiple revenue streams."

PROFITS NEEDED

Charging for information on the Web remains largely uncharted territory, particularly when it comes to the crucial issue of turning a profit.

Most subscription sites, like print publications, seek a mix of sources to fund operations, including advertising. But charging an entrance fee naturally cuts down traffic, at least in the short term, making a site potentially less appealing to most advertisers.

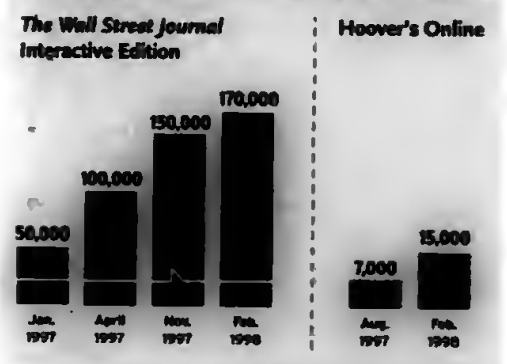
However, online publications can also turn to sources such as partnership deals and transaction revenue.

"I can't tell you five years from now what's going to be the lead horse in that race," Smith said. "It's anybody's guess."

Those who charge for their news said they believe in their business plans, especially as Web usage grows. "In our case, it's only with subscription revenues that our model works," Baker said. "We think profitability is certainly going to come. We don't think it's years and years off in the future." □

PAYING FOR INFO

Paid subscription growth at two online information providers



Non-financial sites remain in red

Can Web sites outside the financial arena successfully charge for subscriptions?

***Slate*, a webzine backed by Microsoft Corp., came under criticism from analysts and some within the Internet publishing industry in February when it announced it will start charging users for its online publication.**

Critics said *Slate*'s brand isn't strong enough yet to attract paying readers when other webzines are still free. Print publications, which readers have always paid for, don't face that hurdle when they go online.

"We were doing this a long time ago and received some criticism of it," said Chris Jennewein, vice president of technology and operations at Knight-Ridder New Media in San Jose, Calif. "It's hard to charge for good information when there's a lot of poor information for free."

Knight-Ridder's *San Jose Mercury News* Web site, launched in 1995, has about 10,000 paying online subscribers, while the NewsHound search and retrieval service, also run by Knight-Ridder, has about 2,500. "I have seen an upturn in interest in the last few months," Jennewein said.

And though Knight-Ridder's online ventures aren't breaking even yet, "we are not losing as much money as a lot of our newspaper competitors — we know that," Jennewein said.

ESPN SportsZone wouldn't release subscription numbers for its premium services, but Brian Ratzlifs, manager of business development, said the site is in the same league as *The Wall Street Journal*, which has about 170,000 paying subscribers.

"We've noticed an increase in our rate of growth," Ratzlifs said. "1998 will be a year when you will see more content-based sites charge subscriptions. I think this is the year we kind of get over the hurdle."

— Sharon Machlis

Tivoli's report manager targets paper pileups

▸ *Tool lets users print only what they need*

By Patrick Dryden

TIVOLI SYSTEMS, INC. this week will introduce software for managing and delivering all those reports churned out by client/server databases and resource planning systems.

The output management tool, called Destiny, works on its own or in Tivoli's TME 10 enterprise management framework.

It automates the process of presenting timely data to users. Instead of fetching a chunky printout from the print shop, users could browse an intranet page or check their electronic mail, fax machine or nearest network printer.

"Ideally, we won't lose or delay reports and maybe not print big reports at all," said beta tester Martin Lee, manager of technical support services at Analog Devices, Inc. in Norwood, Mass.

The goal is to send data from MVS, Unix and PC systems via the file transfer protocol to a Windows NT Server running Destiny, Lee said. Then Destiny notifies users which reports are available so they can browse the information and print only what they need.

TIME SAVER

Automation promises to save staff time spent manually routing new files and culling old ones from diverse systems, Lee said. A few end users who create critical information will get the Destiny agent software so they can more easily distribute reports from their desktops, Lee said.

"Output management is not a sexy topic, but you can't load a truck without a manifest," said Sue Aldrich, an analyst at Patricia Seybold Group in Boston.

The routine data center chore is tougher to handle in distributed environments because there is no central point of control and recipients keep roving, Aldrich said.

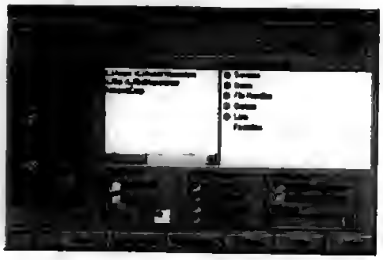
Tivoli is addressing that need with software it gained last year when parent IBM acquired Unison Software, Inc. in Santa Clara, Calif. Destiny will work closely with Unison's Maestro job scheduling software. For example, it can examine an output stream for errors and then tell Maestro to redo that job.

The combination of Destiny and Maestro should ease "culture shock" during a migration from the current host to Oracle Corp. databases running on Windows NT Server at Rowe Furniture Corp., said Henry Buckland, assistant director of information services at the manufacturer in Tysons Corner, Va.

"We need to manage the production and delivery of reports like we did in the mainframe world," Buckland said. "We have to innovate to compete, but we don't want to jeopardize the past five years of successful growth by too many changes."

Dazel Corp. in Austin, Texas, offers a much more mature output manager for distributed environments, Aldrich said. Dazel's software can run on its own, integrate with TME 10 or team with the job scheduler from New Dimension Software Ltd. in Irvine, Calif.

Both stand-alone Destiny and the TME 10 Output Manager option for Tivoli's framework are expected to ship in May. Prices will be announced then. □



→Output management software can simplify the routing of reports throughout complex enterprise environments

Enron parlays software into $500M win

CONTINUED FROM COVER 1

California's $20 billion-per-year electricity market is slated to open for competition March 31. Although only a fraction of the state's residential customers have elected to switch companies, commercial businesses and government agencies have been negotiating electricity contracts with energy suppliers such as Enron.

Indeed, new market entrants such as Enron are "sitting in the catbird seat" because they are entering the California market without the logistics and legacy system "headaches" incumbent utilities such as San Diego Gas & Electric Co. are burdened with, said David Cain, manager of business development at the Electric Power Research Institute in Palo Alto, Calif.

An investment of less than $1 million to develop a meter data management agent enabled Enron to snare a $500 million contract

In the U.K., for example, "established" utilities have postponed their plans to offer retail access to electricity largely because of problems they have experienced "reworking" their legacy systems, Cain said.

A FEW HURDLES

EES faced several vexing challenges in creating and delivering the system. For one, the market rules for selling electricity "were still being developed as we built our system," said Lee Simmons, senior director of information services at EES.

On top of that, Enron had less than six weeks to complete the project, about twice as long as it typically takes utilities just to create a detailed design for an application, said Neil T. Brigham, former chief information officer at Northeast Utilities in Berlin, Conn. He is now vice president of utilities at TenFold Corp., the Draper, Utah-based software developer that built the MDMA system for Enron.

Enron was able to work through those issues by following recommendations issued by an MDMA users group responsible for "procedurizing" the tools used to validate and estimate metered data, Simmons said. In addition, TenFold used a rapid application development methodology it calls the Universal application. It "productizes" application development more efficiently than systems integrators such as Cambridge Technology Partners, Inc. and Sapient Corp., said Scott Grooms, an Enron project manager who worked with Simmons on the MDMA effort.

The result: Enron had a working version of the application by Dec. 15, even though the rules weren't completed until two weeks later.

Cain said energy service providers such as Enron still have a lot of work ahead of them to meet future requirements in the deregulated market. For example, providers such as Enron, utility distribution companies such as Pacific Gas and other entities still have to settle data differences among various metering and billing systems and figure out ways to seamlessly transfer customer information among themselves. □

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"The importance that the Intel/BMC relationship brings to the market is that BMC innovation in I/O technology naturally makes them a leader in this collective new I/O-centric industry," states Alan Steinberg, Director of New Business Development, Connected P.C. Division at Intel. "Currently we have companies coming in from the desktop and from other areas of the industry that don't necessarily have the Enterprise experience BMC Software has to deal with the type of I/O that is needed in what could be called the new 'open mainframe' world."

Steinberg envisions a world where Microsoft will provide the main operating system, Intel will provide the hardware architecture and BMC Software will contribute the key I_2O-compliant management technology. BMC Software's role will be to help architect what Steinberg calls the "highly available, highly manageable open system mainframe" on the I/O space.

Bob Beauchamp, Vice President of Strategic Marketing and Corporate Development for BMC Software, agrees. "The pervasiveness of the i960 chip in the Windows NT and NetWare environments, combined with BMC Software's PATROL technology, will empower customers with unprecedented management and monitoring capabilities from the application to the motherboard."

Clearly, the ability to gather statistics regarding I/O is a great step forward. The PATROL Application Management Suite completes the picture by correlating I/O statistics with the applications that are utilizing the I_2O components or sub-system. This allows unprecedented optimization capabilities, such as automated load balancing, cache reallocation, and the rerouting of network traffic. All of these capabilities can be performed on demand and are based on the performance requirements of the applications.

Currently, no two vendors come as close as Intel and BMC Software in providing this comprehensive approach to I/O processing and manageability.

"We've moved into a new paradigm where I/O is as important as the central CPU technology," states Steinberg. "This shift will allow BMC to proliferate its management product line in the open systems environment. Pairing Intel I/O technology with PATROL is just the very beginning. It's the first product of many, as this new I/O-centered technology emerges into the marketplace, and we think it's going to be an exciting ride."

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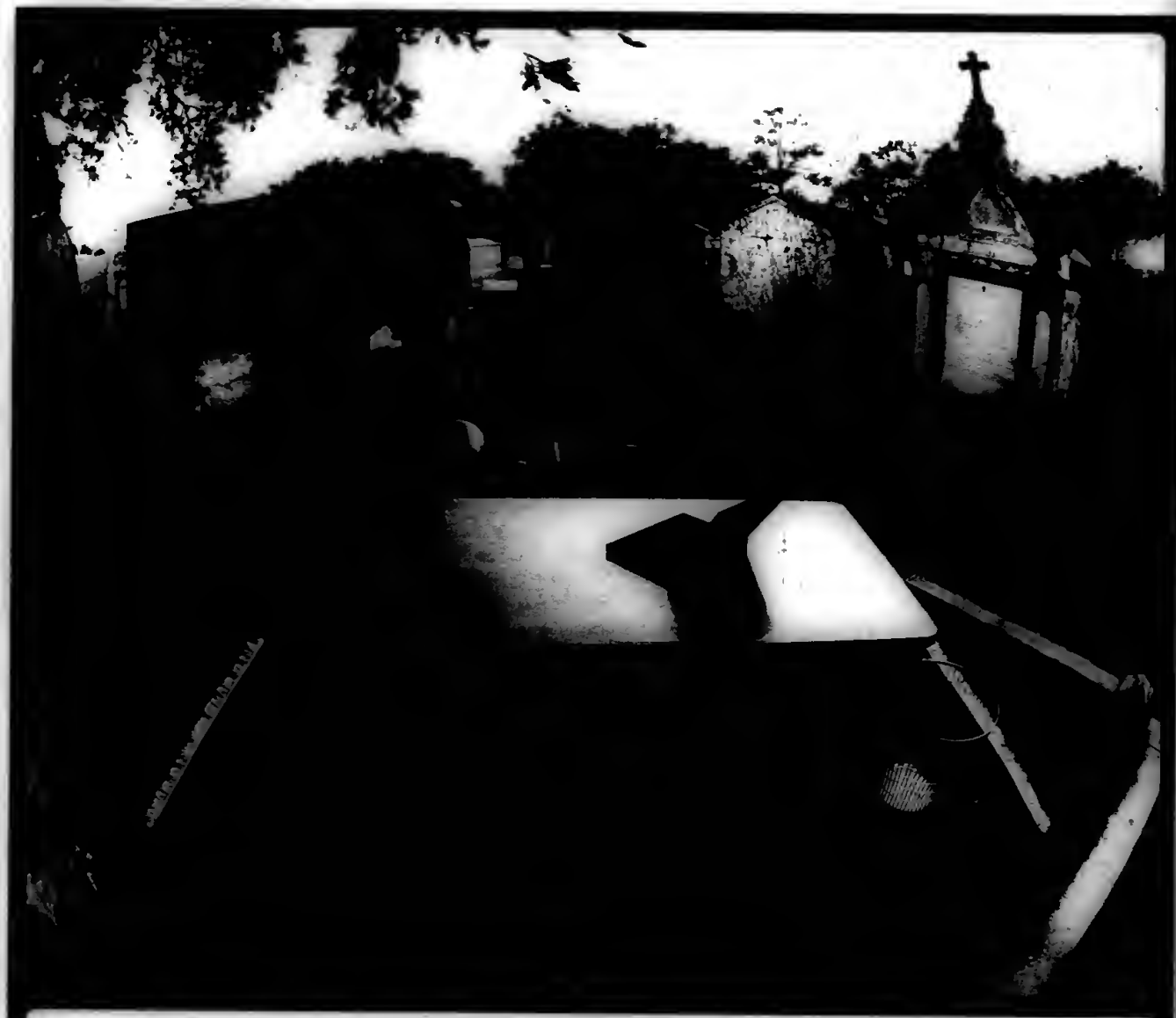

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Network upgrades take a backseat to year 2000

▶ *Users fear crush of two migration players*

By Laura DiDio

THE COMPLEXITY AND COST of upgrading a network operating system is daunting enough, but the prospect of juggling that with a year 2000 project is giving some companies pause.

"The year 2000 upgrade is huge. If we don't do our network operating system upgrade very quickly, we'll likely put it off until after 2000," said Dave Meixner, network engineer at National City Bank in Cleveland.

An information systems manager at a large East Coast brokerage, who requested anonymity, agreed.

"This time next year, I know I'm going to be too embroiled in the final, crucial stages of my year 2000 compliance to worry about upgrading to Windows NT 5.0. In fact, I won't consider installing NT 5.0 until the kinks are worked out, and that's way too close to 2000 for comfort," he said.

Mike Nash, Microsoft Corp.'s marketing director for Windows NT, said he doesn't think most large corporate users will delay their NT upgrades because of year 2000 projects. Nash said because Windows NT and its BackOffice server packages are already year 2000-compliant, users may benefit from upgrading now.

FULL SPEED AHEAD

And there are pockets of networking pioneers who insist they will forge ahead with simultaneous year 2000 and network upgrades.

"We've already completed the lion's share of year 2000 testing for our accounting and legal applications, so that part is behind us," said Steve Sommer, vice president of MIS at Hughes, Hubbard and Reed, Inc., a New York law firm.

He said he plans to upgrade to NT 5.0 as soon as it ships. "We need and want [NT 5.0's] Active Directory badly. I don't want to live with the current administrative nightmare of NT 4.0 domains one minute longer than I have to," Sommer said.

Users and analysts were divided on the ramifications delaying network operating system upgrades would have on businesses. Some said a delay would make little difference, especially in regard to Windows NT Server 5.0.

"It's going to take Microsoft at least six months to work the kinks out of NT 5.0, and that brings us up to mid- or late 1999, which may be cutting things too close for businesses that are also putting the final touches on their [year 2000] projects. Many customers tell us they don't want to risk it," said Bob Sakakeeny, an analyst at Aberdeen Group, Inc., a Boston consultancy.

But Sommer, like others, said, "Given the shortened product life cycles, if I wait six months to do a [network operating system] upgrade, I could actually be putting my business back 18 months because we wouldn't have all the latest features and functionality."

But industry analysts predict that many more users will chart a conservative course.

"It's a very daunting task to migrate the directory tree and restructure hierarchical relationships from domains," Sakakeeny said. "Even with Novell Directory Services, users must still make a slew of changes, like upgrading the drivers, changing the registry and just familiarizing themselves with the new operating system." □

PC vendors get management fever

▶ *User cries answered, but life cycle concerns grow*

By April Jacobs

PC MAKERS say they have seen the light and are busy cranking out a new class of desktop machine for users who demand easier management at lower prices.

But analysts said the trade-off for users will be a compromise on longer life cycles.

Vendors have introduced a series of products over the past months that don't fall into the category of thin client or network computer. Instead, they are offering highly manageable computers that can take advantage of centralized management tools but are flexible enough to adapt to different user needs.

Compaq Computer Corp., Dell Computer Corp. and IBM have shipped PCs that fit that description.

For example, IBM recently rolled out its 300GL manageable PC with a powerful Pentium II processor, Distributed Management Interface (DMI) 2.0 compliance and remote wake-up capabilities that allow for remote troubleshooting and software upgrades. It costs less than $1,500.

Dell has a similar offering, dubbed the OptiPlex DXA and GN+, that carries the same features, with processors that range from entry-level Pentiums to 266-MHz Pentium IIs. The machines have optional CD-ROM drives and standard network cards.

Even Intel Corp. has capitulated, announcing that it will make inexpensive chips for low-end computers, a market the Santa Clara, Calif., chip maker shunned last year, despite clamoring by users for more offerings in the sub-$1,500 range.

PROMISE KEEPERS

Intel's action may be just in time because users have grown wary of promises of easier management.

"Total cost of ownership is going up, not down, and all the talk about better management and things like plug and play that were supposed to make life easier haven't saved us a penny yet," said Tsvi Gal, executive vice president at ABN AMRO Bank Corp.

"And all of the wonderful achievements the vendors have had with making faster and more powerful computers are wasted by the fact that we are paying the same prices for PCs year after year and the fact that the complexity of the systems has made them difficult to manage," Gal said.

There has been so much talk in the past year about management of PC environments that the specific aspects that would translate into cost savings and better performance got lost in a "nebulous cloud," according to Michael Takemura, a Compaq product marketing manager. Those include Intel's new DMI 2.0, designed so network managers can distribute software and troubleshoot from a central location.

But with new features abounding, vendors have been pushing the hardware cycle more than ever.

"Microsoft and Intel are pushing the turnaround time to two years [on PCs], but there had better be some serious benefit for users, and the capital cost has to be low," said Martin Reynolds, an analyst at Dataquest in San Jose, Calif.

Those benefits should include features that make the PC easy to install, simple to configure and not too expensive, said Reynolds, who pointed to new manageable PCs such as Compaq's 4000S as an example. Its design makes it easy to service, and it has remote wake-up features that allow troubleshooting and software upgrades from a remote location, he said.

Some PC companies also are pulling back from their focus on PC form factors such as the sealed chassis and boxes without floppy drives, which have failed to excite users. The NetPC for example, failed to take off last summer.

And users don't like the idea of having to buy often to get what they need.

"We like to buy our PCs with the expectation of keeping them for at least three years, but right now the sense is that there is too much coming out too fast," said John Pastore, chief technology officer at Capitol One Financial Corp. in Chicago.

"And I wonder if it's really necessary for them to introduce so many changes so often. Because if we pass those on to users, we would have a mishmash environment," Pastore said. He added that he standardizes users' hardware and software as much as possible to reduce support costs. □

Vendors move to address users' PC concerns in the coming year:

- **Managed PCs: Allow for remote troubleshooting and software updates through remote wake-up, but they aren't as rigid as NetPCs, which have no floppy drives and feature sealed chassis.**
- **Zero Administration for Windows: Microsoft's Windows operating system will allow administrators to drill down to PCs to solve problems and make it easier to manage them.**

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OVER THE EDGE?

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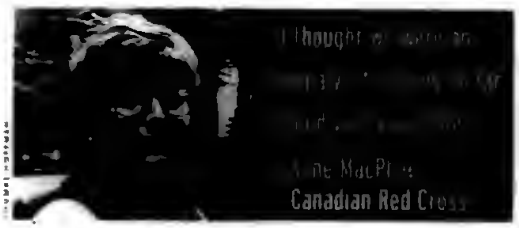
Year 2000: Hospitals diagnose themselves in critical condition

By Thomas Hoffman
ORLANDO, FLA

YOU'VE HEARD ALL the dire warnings about avoiding air travel on Jan. 1, 2000, because of millennium bugs in air traffic control systems and aircraft cockpit gear, right?

Well, you might want to avoid being hospitalized when the century turns. It might just save your life.

Industry executives at the 1998 Annual Healthcare Information and Management Systems Society conference and exhibition held here last week said many hospitals are far behind in correcting the date-sensitive bugs in computer systems that track everything from electronic patient records to accounting systems. Nearly seven out of eight health care organizations risk year 2000-related systems failures largely because of their lack of responsiveness, according to a report issued at the conference by Stamford, Conn.-based Gartner Group, Inc.



Far more critical, the health industry executives said, is the lack of effort being made to diagnose the impact on biomedical equipment, such as ventilators and other life-support systems with embedded hardware and software (see chart).

It doesn't help that "thousands [of biomedical equipment makers] have been wishy-washy" about addressing the year 2000 compliance of their machines, said Kimberly A. Kalajainen, a consultant at Arthur Andersen LLP.

"I thought we were an anomaly" for being so far behind with year 2000 project work, "but I came to this conference and found that we're in the same boat as just about everyone else," said Anne MacPhee, director of finance and corporate services at The Canadian Red Cross Society in Toronto.

"There doesn't seem to be senior management commitment from many organizations" in dealing with the year 2000 problem, she said. Since the year 2000 crisis "isn't going away, sometimes it requires creative approaches for funding" until that commitment is made, said MacPhee, referring to how some organizations have been drawing funding from their administrative budgets to pay for year 2000 projects. MacPhee wouldn't disclose how her organization is dealing with the funding issue.

The industry's cost-conscious managed care environment is contributing significantly to hospitals' millennium malaise, said Andrew Rushmere, president of Aviant Information, Inc., a systems integrator in Simi Valley, Calif. "I don't know a health care organization that isn't cash-constrained, and that's affecting year 2000" efforts, Rushmere said.

An acceleration in mergers and acquisitions among hospitals, aimed at lowering combined operating expenses, "are slow, step-by-step efforts. No single person has year 2000 tattooed on his forehead" and is taking responsibility for project work after the deals are completed, said Russ Ricci, general manager of IBM's Global Healthcare in Waltham, Mass.

The decision by Sisters Hospital to join the Catholic Network, an affiliation of seven Buffalo, N.Y.-area hospitals, helped delay the launch of the hospital's year 2000 project last year by three to four months, said Amy Clay, director of IS at the 320-bed facility.

NOT HOMEGROWN

A possible silver lining for Sisters Hospital and other institutions is that most hospitals opt for the buy-vs.-build approach to software. But while that reduces the resources required to fix homegrown systems, hospitals will still be challenged to "make sure vendors don't slip on delivery dates," said Eric B. Yablonka, vice president and chief information officer at the Hospital of St. Raphael, a 511-bed acute care facility in New Haven, Conn.

Half of Marion General Hospital's information technology vendors have been silent about whether they are fixing their systems, said Daniel W. Wright, administrative director of IS at the 230-bed hospital in Marion, Ind. Fortunately, nearly all of the systems in question, including a nursing staffing station system, aren't critical to the hospital's operations, Wright said.

"We're prioritizing," Wright said. "Some databases people are using for record-keeping just aren't going to get fixed."

St. Raphael's launched its $4.7 million millennium project in 1996, well before many hospitals. Yet Yablonka acknowledged, "We do not have the problem licked." For example, his team recently uncovered 18 ventilators that were noncompliant. Fortunately, the ventilators are covered for repairs under the hospital's maintenance agreements. □

YEAR 2000 EMERGENCY

How hospitals can get a jump on fixing year 2000 bugs

- Review maintenance agreements to ensure that IS and biomedical manufacturers will fix their date-sensitive systems.
- Keep a log with times and dates of vendor calls for legal purposes.
- Pool all project information into a central repository, using a database with four-digit date fields.
- Don't wait for vendors to respond before entering the planning phase.

▸ *But older browsers could set up roadblock*

By Sharon Machlis

WITH DYNAMIC HTML set to become an official Web standard sometime soon, some major sites are already starting to roll out new features based on the technology.

But others say they will wait until more users have DHTML-capable browsers. No Version 2.0 or 3.0 browsers currently support DHTML, and those are the browsers used by most World Wide Web surfers today.

DHTML aims to make Web pages more interactive by giving scripting languages new ways to access pages. Besides gaining improved animation, users can modify a page on their own system without reloading anything from the host site. "It can result in a greater user experience at a relatively cheap cost," said Sangam Pant, vice president of engineering at Lycos, Inc. in Framingham, Mass. "It's allowing users to avoid more clicks."

The Wall Street Journal Interactive Edition rolled out a DHTML-based "personal path" feature in mid-January, which lets users set their site preferences. The personal path can pop up as a separate box for site navigation; DHTML lets users rearrange items in the box by dragging and dropping. That is all done on the client side, with no need for a call back to the server until the rearrangement is complete, said Alan Karben, associate director for interactive development at The Wall Street Journal Interactive Edition.

With conventional HTML, each time an item on a list is moved up or is completed, a server hit is triggered. That causes system strain for the host and sluggish response for the user.

Station@sony.com expects to use DHTML for site animation within six to eight weeks, said Roger Smith, creative director at Sony Online Ventures, Inc. in New York. The Sony site first will detect a user's browser version before it sends either a conventional HTML or DHTML version, Sroith said.

ACCESS WORRIES

But Patrick Naughton, president and chief technical officer at Starwave Corp. in Seattle, doesn't like what he sees as DHTML's Basic-like programming or the fact that anyone can see a site's sophisticated programming techniques simply by choosing "view source" on a browser.

Critics worry that when a DHTML standard is endorsed by the World Wide Web Consortium, Microsoft Corp. and Netscape Communications Corp. will be developing their own implementations that aren't fully compatible. Still, Smith said, that's better than the situation now, where Sony programmers have to work in Visual Basic for Internet Explorer and JavaScript for Netscape Navigator. □

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QUICK STUDY

What trends & technologies in brief

Handheld PCs

DEFINITION: Small computers that were designed to fit in a person's hand. They are battery operated and use a keyboard or pen as an input device. There are two groups of handheld PCs: standard handhelds and expandable organizers. Standard handhelds adhere to hardware and software compatibility standards. Their development may be licensed to third-party vendors. They weigh about a pound and are slightly larger than organizers at around 7 in. by 4 in. Expandable organizers are smaller than handhelds, weigh less than a pound and are about 6 in. by 3 in. Applications or memory can be added to the devices, but the machines often have proprietary operating systems and they can be used as organizers with limited or no connectivity.

HANDYMAN'S GUIDE TO HANDHELDS

Top standard handheld vendors by shipments

3Com's PalmPilot

UNITS SHIPPED: 557,000*

PalmPilot

Uses a pen interface and strokes, called Graffiti, that resembles the alphabet. Sales have outstripped all Windows CE sales combined. It has succeeded because it doesn't try to shoehorn a desktop GUI into a tiny screen. Many users say the PalmOS is simple to operate and more intuitive than Windows.

Hewlett-Packard's HP 320-LX/360-LX and 620-LX

UNITS SHIPPED: 90,000*

HP 620-LX

HP has added color and voice recording to its lineup with the HP 620-LX, but it sacrifices battery life for those features. The 4M-byte, Windows CE 1.0-based 320LX has been updated to the Windows CE 2.0-based 360LX. HP added a better screen and faster 60-MHz processor. The 360LX and 620LX can be managed with network management tools.

Apple's MessagePad 2000/2100

UNITS SHIPPED: 43,000*

MessagePad 2100

Analysts aren't betting that MessagePad will break out of its niche market. But supporters say it's still the best device for those who don't want to lug both a handheld PC and notebook computer.

Casio's Cassiopeia

UNITS SHIPPED: 38,000*

Cassiopeia A-20

Casio has jumped onto Microsoft's Palm PC initiative with its E-10 due in the second half of this year. The E-10 will feature a 100-MHz RISC processor and a 240-by-320 dot/in. backlit screen. Casio will continue to offer its new Windows CE 2.0-based Cassiopeia A-20, with a 6.2-in. screen.

* Units shipped for the first half of 1997, according to Dataquest

'Next big thing' is tiny, but may pose giant systems management problems

By Gordon Mah Ung

THEY'RE COOL, TRENDY and the next big thing to invade your company's desktops. Handheld PCs are set for another big growth year, experts say, and with it comes the largest backdoor migration since the PC itself.

Until two years ago, these devices were just fancy electronic organizers. Now with the popularity of 3Com Corp.'s PalmPilot and the muscle of Microsoft Corp. behind Windows CE devices, analysts say IS managers should get in sync with what the devices can do and what users will use them for.

AT ISSUE
Help desk support

Handheld PCs aren't just databases of addresses and telephone numbers. Now they allow users to check electronic mail, browse the Internet and send faxes.

BIG BENEFITS, SMALL PACKAGE

Adding to their surge in popularity are third-party vendors; they are giving these pint-size devices full-size functionality.

Those vendors include Planet Computing, Inc. in Austin, Texas, which is about to introduce a full Lotus Notes 5.0 client for Apple Computer, Inc.'s Newton; and Avantgo, Inc. in San Mateo, Calif., which recently released an application that downloads selected World Wide Web pages to a PalmPilot.

"First and foremost, these [devices] have to be recognized as extremely powerful computers that can be purchased by most folks with their own personal budget," says Ken Dulaney, vice president of mobile computing at Stamford, Conn.-based Gartner Group, Inc.

Many of the small computers, because they are consumer devices, don't have the support infrastructure that most notebook computers have, Dulaney notes.

Because handheld PCs are designed to be docked with a desktop or laptop for synchronization, it ultimately means more headaches for IS as users expect help desk support.

"It's going to require some pretty careful evaluation; nevertheless, it can't be ignored. It offers a new level of flexibility in terms of what you can deploy. At the same time it brings another level of support," says Mike McGuire, an analyst at Dataquest in San Jose, Calif.

Gartner suggests that IS departments get involved in setting standards, but that may be difficult because of people's tastes and because the devices are still purely consumer-based.

Analyst Diana Hwang at International Data Corp. in Framingham, Mass., says IS managers should keep the convergence issues in mind.

Although they are secondary, to handheld PCs in the workplace, mobile phone technology, pagers, organizers and even Internet access and faxing are expected to merge at one level. Hwang says IS managers should evaluate those devices as they come along so the managers won't be blindsided. □

QUICK STUDY ONLINE

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MARKET GAINS

Standard handhelds
Worldwide units shipped

1995	481,000
1996	818,000
1997	1.1M*
1998	1.6M*

Expandable organizers
Worldwide units shipped

1995	774,000
1996	798,000
1997	878,000*
1998	948,000*

*Projected

Source: Dataquest, San Jose, Calif.

■ *Are there technologies or issues you would like to learn about in QuickStudy? Send your ideas to QuickStudy editor Stefanie McCann at* ***stefanie_mccann@cw.com***

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OPINION

Tripping on technospeak

Does anybody know what you're talking about?

That's a good question for technology managers to ask themselves now that businesspeople are interested once again in what's going on back in the systems department.

Actually, it's also a question the entire jargon-riddled computer industry should consider. We are collectively guilty of babbling about platforms and solutions and three-tier architectures and then feeling mighty smug when ordinary folks look lost.

But the days of geek chic are numbered. The rising commercial interest in the Web and the Internet is luring scores of businesspeople to take another crack at understanding technology. Feeling a touch of deja vu here? In the early '90s, client/server computing also piqued their interest briefly, but its popularity sunk under the weight of its complexity. All that jargon about infrastructure didn't help, either.

But today something new is blowing in the wind: custom-made training courses that take the mystery out of technology for business-savvy nontechies.

One leading-edge practitioner of that concept is State Street Bank & Trust, as Julia King's story on page 31 details. The Boston-based bank hired an outside consulting firm — stocked with teachers and communicators rather than MBAs and gearheads — to design a one-day class for its nontechnical managers. The goal is to give people working knowledge of technology, enabling them to ask better questions about business value. But the unique twist here is the way the consultants customized those tech classes so that they explain the bank's systems and applications.

Great idea, isn't it? Feel free to steal it for your own company. Then maybe everyone will finally know what you're talking about.

Maryfran Johnson, *executive editor*
Internet: maryfran_johnson@cw.com

LETTERS

IS image remake hurts eyes

WITH ALL the hoopla over the perceived nerdy image of information systems workers, I was dismayed to receive the conference package for Novell, Inc.'s BrainShare '98.

Although I prefer casual as much as the next person, this image is a bit over the edge. It would be scary to envision a corporate IS department staffed with this green-on-green checked fellow.

Please Novell, don't help our image anymore.

My neurons are excited enough trying to keep up with the industry. I don't need a retinal assault to overload my brain.

Keith Hunter
Indianapolis
khunter@compuserve.com

CIOs can't win if they fall off the year 2000 tightrope

COMPUTERWORLD columnist Ed Yourdon's proposal for an information technology development moratorium ["Ready for the great IT moratorium of 1998?" CW, Jan. 19] held that any CIO who holds up all other business development to do year 2000 conversion work had better have a resume ready. With today's rate of business change and dependence on IT, that would be suicidal.

We had one client who scrapped normal development in favor of a big SAP project: Measured IT effectiveness took a nosedive, along with business profit margins. The SAP project was scuttled after a year, and he's (luckily) still rebuilding IT's business credibility.

The smart CIO is forced to walk the narrow path between year 2000 issues and support for ongoing business operations. He or she will be blamed for failure on either side.

Tom Lodahl
Chairman
CogniTech Services Corp.
Columbus, N.C.
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Good skills beat degrees

I READ WITH INTEREST the recent articles and columns in *Computerworld* about the IS labor shortage. The computing industry as a whole suffers from a seemingly unshakable image of the bespectacled geek hunched over his terminal in the dark. I don't think image is important when it comes to computers, but if a nationwide positive advertising campaign would attract more people to a career in computing, I'm all for it.

But I have questions concerning degrees in computing. I am 19 years old and have been working for two small companies as a technical support/network administration and Unix programmer, respectively. I learn new things relevant to my job every day, while my friends in school learn things such as "This is a shell prompt."

Would competent people without degrees help to fill this labor gap? Internships and training could greatly assist this problem.

Kevin Jamieson
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derf@sonic.net

Automated management does work on Windows NT

IN RESPONSE to Brett Arquette's column in *Computerworld* poking fun at zero administration ["Wake me when Zero Administration arrives," CW, Jan. 26], it is indeed possible to automate those tasks if you run Windows NT instead of a "Mickey Mouse" home computing system such as Windows 95.

We are using Exchange, Outlook and Windows NT with roving profiles enabled, so the entire user's environment follows him around.

We still use Digital Equipment Corp.'s VMS Pathworks servers (file servers) in addition to our NT servers (print and application servers) because they provide awesome redundancy.

And did I mention that we configured our NT environment so that our users cannot install their own applications?

Talk about a good way to reduce trouble calls with only a small increase in calls for software installs.

Kevin P. McCarthy
Manager of technical support
Boston Water & Sewer Commission
Boston
mccarthykp@bwcs.org

Computerworld welcomes comments from its readers. Letters shouldn't exceed 200 words and should be addressed to Maryfran Johnson, Executive Editor, Computerworld, PO Box 9171, 500 Old Connecticut Path, Framingham, Mass. 01701. Fax number: (508) 875-8931; Internet: letters@cw.com. Please include an address and phone number for verification.

A modestly bad proposal

Jeffrey R. Kuester

Does your company want to start paying lawyers to monitor your competitors' domain name registrations to make sure they stay away from your trademarks? Each time you add a domain name, should your archrivals be allowed to stall the project simply by filing an objection with the feds?

All that and worse will happen if the U.S. Department of Commerce's Proposal to Improve Technical Management of Internet Names and Addresses, recently released for public comment, is adopted. It's the Commerce Department's suggestion on how to improve technical management of the Internet's domain name system.

The Commerce Department's Internet plan would keep only lawyers happy.

The current system has been criticized because of the absence of competition in domain name registration and cumbersome, unfair mechanisms for resolving trademark and domain name conflicts. More than 400 comments were received when the Commerce Department announced its intent to develop the proposal, so plenty of ideas are out there.

The proposal leads off in the right direction. The department realizes that for cyberspace to function as an effective commercial market, business must be confident that trademarks can be protected. But enforcement must mesh with the needs of the Internet community as a whole. Give the Commerce Department an A for effort.

Unfortunately, the proposal not only fails to fix major problems with the current system, but it also creates new ones.

First, one of your business foes could get your new domain name automatically suspended merely by objecting within 30 days of your registration. Worse, the requirements for such an objection are unclear.

The proposal suggests the suspension should last only a brief period. Right. Brief trademark lawsuits can easily last months. Just imagine paying lawyers for months on end every time a new domain name is needed. Besides those costs, the automatic suspension time could cripple your new business waiting to open its cyberdoors.

Conversely, if your company owns trademarks or service marks, your legal bills and frustration will escalate. You'll need to pay someone to monitor new second-level domain name registrations across all the new top-level domains so you can object to harmful registrations within 30 days. No longer will you worry only about xyzcorp.com, but you'll also fret over xyzcorp.firm, xyzcorp.web, etc. Confused? Your customers will be, too.

The proposal also suggests nothing to resolve the problem of reverse domain-name hijacking — the threat that someone with a registered trademark could cause your domain name to be automatically suspended. For example, to prevent its domain name from being automatically suspended, U.K. service provider Prince, owner of prince.com, recently was forced by the current policy to sue U.S. sporting goods company Prince after being informed that the U.S. company wanted the domain name.

If you don't like what you've just read, what can you do? First, see the proposal yourself (*www.ntia.doc.gov/ntiahome/domainname/dnsdrft.htm*). Then tell the government that registries should take a hands-off approach to domain name dispute resolution, that we don't need more complicated regulations varying from registry to registry and that automatic suspensions should never result from mere complaints. □

Kuester is a registered patent attorney and partner at patent, copyright and trademark law firm Thomas, Kayden, Horstemeyer & Risley in Atlanta. His Internet address is kuester@tkhr.com.

The IT collapse of '04

John Gantz

In hindsight, it's easy to understand the collapse of the computer industry last year (in 2004, if you're still sleepy). The seeds of destruction were sown in the late 1990s and were even known by some.

Perhaps it was the flurry of concern over the year 2000 bug that obscured the issues that led to the great fall.

I first heard the theory in 1998 from Mike Melenovsky, a vice president at International Data Corp. (IDC), who developed it after talking with officials at several outsourcing firms (that's why we call it the Melenovsky Effect).

Melenovsky's theory was that a shortage of trained service professionals, coupled with vastly more complex applications and environments (with Microsoft Windows 95 the client-side bellwether), would create an exodus of staff from user organizations to service and outsourcing firms, which would offer them superior career paths and money. The training and assimilation problem brought about by such a mass migration would prompt major user companies to pressure vendors to slow the rate of technological obsolescence. By 1998, the life cycle of many products and applications was shorter than the training time for installation, integration and maintenance professionals. That user pressure would manifest itself in major bids as adherence to older standards, elongated depreciation cycles and technology insertion clauses in major leases. At the same time, the theory went, outsourcers would begin to offer services and solutions remotely — the better to conserve their most critical resource, highly paid staffs.

Exactly how this technology slowdown would affect the industry was obscure in Melenovsky's theory. He talked only of a slowdown in hardware and software shipments — not the collapse of a house of cards.

As early as 1998, signs of the Melenovsky Effect were evident. Compaq acquired Digital in a bid to capture the largest NT-certified maintenance force in the world. IBM announced it would hire 18,000 employees in one year, mostly in its service organizations ["IBM hiring demand likely to exceed supply," CW, Feb. 23, 1998]. Those companies knew it takes only a handful of good programmers to write an operating system, a piece of middleware — even an application. But it takes an army to support it.

When growth rates fell, major vendors were no longer able to dictate the pace of change and drive major upgrade cycles. That lowered growth rates, but it lowered market valuation even more. With stock options no longer the lure they once were for the brightest of the bright, a reverse brain drain from product companies such as Intel and Microsoft to service firms began. The entrance of the telephone companies, copier giants, UPS and several state schools into the computer-support business signaled the depth of the transition. The founding of the joint military I-Corps, made necessary by the military's increasing dependence on civilians to keep its systems running, was the capstone of the change.

The labor shortage spawned by runaway technology will bring upheaval.

So we've come full circle. In the 1950s, when the digital computer was in its infancy, scientists predicted that one day there would be only a handful of giant computers and that we would use them as we use electric utilities. It took 50 years, but the labor shortage spawned by the need to support runaway technology has brought us to that point today, in 2005. Time-sharing has been reincarnated by using the infrastructure of the Web, and status is now won by having the skinniest terminal on executive row. Who woulda thunk it? □

Gantz is senior vice president at IDC in Framingham, Mass. His Internet address is jgantz@idcresearch.com.

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Delivering flexibility for the future.

The pace of change continues to accelerate. Yesterday, companies were networking their PCs and putting groupware solutions in place. Today, connectivity is moving beyond the corporate walls. Tomorrow, businesses may rise or fall on the strength of their computer linkages to key suppliers and customers.

To survive in a world of rapid change—or, better yet, to exploit it for competitive advantage—the key is flexibility. Even if no one can predict precisely what tomorrow's business computing solutions will look like, companies know they'll need to adapt and deploy them quickly, without obsoleting their current infrastructure or impacting their current ability to solve problems.

To maintain that flexibility as they expand into uncharted territory, many businesses are basing their computing infrastructure on the Intel Architecture (IA).

By choosing clients and servers based on Intel's Pentium® II, Pentium® Pro, and Pentium® processors with MMX™ technology, companies can build a robust, cohesive environment that provides power and consistency from the desktop to the data center. This common infrastructure, coupled with new Wired for Management technologies and a scalable network architecture, enables companies to deploy new capabilities quickly, yet preserve current solutions. Performance can be added where and when it's needed, easily and cost effectively.

An Intel-based environment also offers the flexibility to match the computing model to the task at hand. Whether the business challenges

intel

demand three-tiered client/server solutions, network-centric Java*-based applications, or Internet-enabled line-of-business programs, the Intel Architecture lets companies give each user or department the solutions they need.

Adding further flexibility, Intel-based platforms are supported by the industry's widest selection of software tools, applications, and add-ons. The economics of the volume marketplace ensure that emerging solutions will likely be available first and with the greatest range of choices on the Intel Architecture.

In times of rapid change, one of the biggest mistakes is to choose a strategy today that limits flexibility tomorrow. By relying on the Intel Architecture as they build their computing infrastructure, businesses can pave a smooth path to the future—wherever the future takes them.

Today's servers: flexibility in action.

The power and versatility of Intel's processor family allows companies to create a cohesive environment that spans lean clients to departmental, application, and database servers. That environment can evolve to meet tomorrow's business requirements without disrupting what works today.

Case in point: Intel-based servers are already running 24x7, business-critical, transaction-oriented applications around the globe. Not only are the majority of file/print and workgroup servers based on the Intel Architecture, but scalable Intel-based servers are delivering reliable, cost-effective computing to the glass house as well. According to SAP, for example, 42% of all new SAP R/3* installations are on Intel-based systems.

Intel's industry-leading commitment to developing next-generation platforms will provide a smooth transition to higher performance while maintaining existing infrastructural investments. Advances in high-performance scalable server clusters and I/O will push performance even higher, as will Intel's forthcoming 64-bit microprocessor architecture. The IA-64™ architecture maintains its compatibility with Intel's 32-bit processors, and dozens of software companies are already tuning their tools and applications for top performance on the next-generation processors.

For clients, servers, and networking solutions, such as Fast Ethernet and Gigabit Ethernet technologies, Intel delivers the performance and flexibility to keep companies on the leading edge, today and tomorrow.

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Corporate Strategies

Case Studies • Trends • Outsourcing

Briefs

Service with Slurpee

Southland Corp., which operates 17,000 7-Eleven Stores worldwide, recently unveiled a financial services center to customers in Austin, Texas. The full-service automated center, based on Personal self-service technology from Dayton, Ohio-based NCR Corp., allows check cashing, bill payment, money transfers, money orders and telephone card purchases. Dallas-based Southland plans to install 36 financial service centers in the Austin area.

Shell licensing pact

Shell Oil Co. in Houston has signed a $1.2 million deal with Simulation Sciences, Inc. in Brea, Calif., to license several process design and simulation software systems. The contract includes Shell's licensing of Simulation Science's Hextran for heat transfer simulation and Pipephase for fluid flow simulation.

Offering a leg up

HBO & Co., a health care technology vendor in Atlanta, has formed HBOC Ventures, Inc., an organization to provide venture capital to small firms with promising health care technologies. HBOC has entered into a letter agreement with The Ohio Partners, an Ohio-based venture capital fund. The two companies will invest up to $30 million in several companies over the next three years.

MOVIN' ON UP

Salary ranges for newly hired CIOs:

Midsize companies

'97 $90,000-$150,000

'98 $122,000-$203,000

Large companies

'97 [illegible]-$230,000

'98 [illegible]-$282,000

Base: 17,765 people at 400 companies and organizations. The survey was taken in late 1997.

Source: Positive Support Review, Inc., Santa Monica, Calif.

Customized classes can give State Street Bank's business managers a better handle on technology issues

Business pros unravel tech mysteries

By Julia King

AS A VICE PRESIDENT in the mutual funds division at State Street Bank and Trust Co., Scott Johnson must come up with better ways to exchange information electronically with his client base of large mutual funds companies.

"But in many meetings, I wasn't able to hold my own," especially when clients brought in their systems people, Johnson recalled. The talk would turn to

Managers unravel, page 33

Scaling the warehouse wall

▶ *Companies also tap outside sources for data*

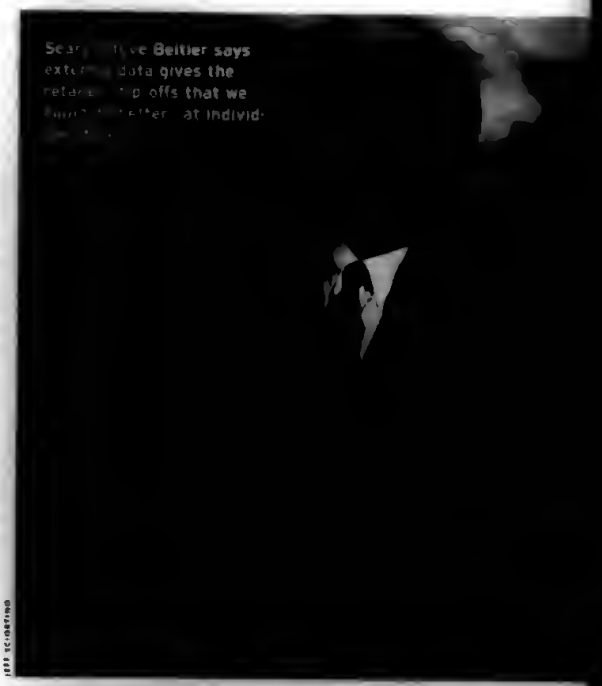
By Craig Stedman
SAN DIEGO

FOR MANY COMPANIES with data warehouses, it isn't enough just to tell users what goes on inside their own walls.

Internal transactions, sales histories and customer records may be the bulk of the data that gets warehoused. But attendees at a recent data warehousing conference here said their companies also rely heavily on external information such as demographics and economic forecasts.

Outside data "is really a big deal for us," said Steve Beitler, assistant corporate controller at Sears, Roebuck and Co. in Hoffman Estates, Ill. Two-thirds of the queries run against the retailer's financial data marts tap in to externally sourced information that helps users "understand our business in the con-

Scaling, page 33



Sabre Group hastens Y2K plans . . .

By Thomas Hoffman

THE SABRE GROUP is racing to fix year 2000 problems in all its internal systems by June — six months ahead of most companies — so there will be time later to coordinate testing with its more than 1,500 external data feeds.

Sabre's Deborah Freedman: Scope of year 2000 fixes grew clear, cost estimates rose

Officials at the Fort Worth, Texas-based company said the number of suppliers and the complexity of connections with external systems prompted Sabre to step up its year 2000 efforts.

It's a heady goal: Most companies are struggling to fix their systems by December to allow for a full year of testing. Sabre is a subsidiary of AMR Corp., which is also parent to American Airlines and the Sabre Passenger Reservation System.

"It was important to make sure our house was clean," said Deborah Freedman, 42, a senior vice president and year 2000 project czar at Sabre.

ENTERPRISE MANAGEMENT

The company wanted to finish its in-house work before it scheduled integration testing with computer reservations systems such as Galileo, Amadeus and other external data feeds.

Year 2000 compliance among Sabre's electronic data interchange (EDI) partners is a constantly moving target, because it is unlikely that all its partners will have adopted new EDI standards that were released in De-

Sabre Group, page 33

. . . while climbing storage management mountain

By Nancy Dillon

MONITORING AND upgrading mainframe storage at The Sabre Group, which has 17 mainframes and 18T bytes of storage in its main data center, could be a real nightmare. But the giant travel reservations service has developed three distinct strategies to help ease the burden.

Sabre's Jane Romine: The company modernizes 20% of its MVS storage each year

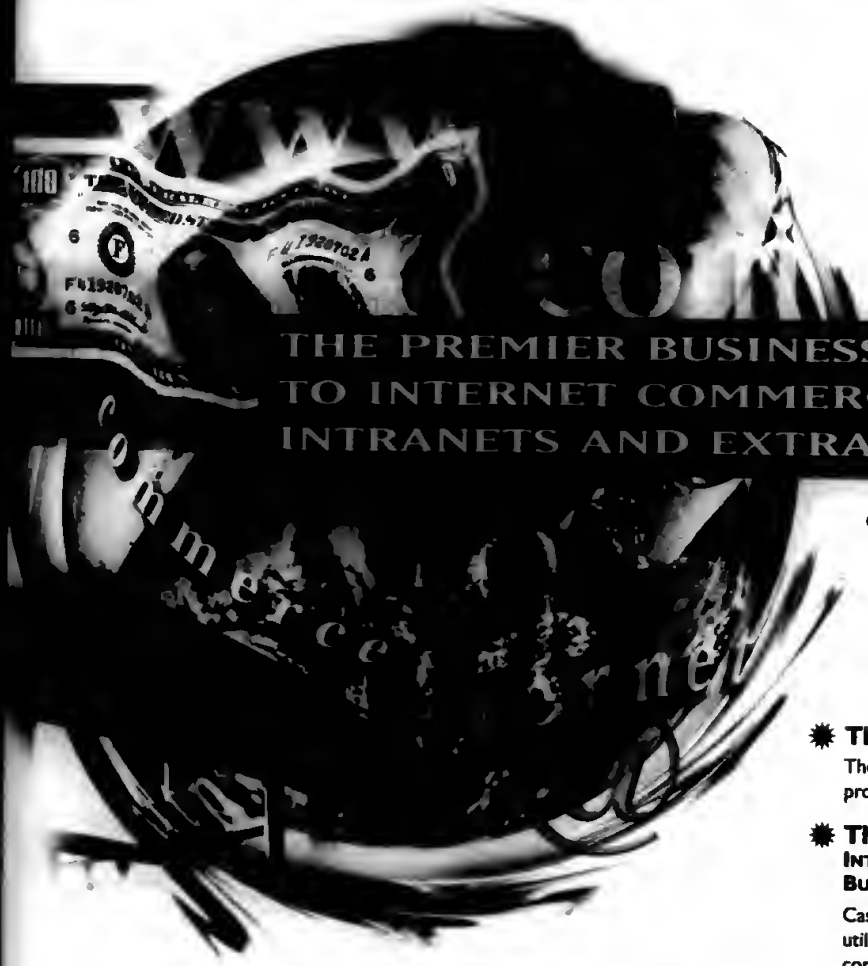
"The speed and availability of our storage is critical to the services we provide, so we have a resource planning group that works to maintain reliability," said Jane Romine, a senior vice president at Sabre.

The first strategy, Romine said, is to "modernize at least 20% of our MVS storage every year." That mandatory replacement of the oldest 20% of products is in addition to expenditures on more mainframe storage capacity, which Sabre buys as needed.

Next, data center managers monitor daily the response times of direct-access storage devices. When statistical analysis concludes that systems performance is suffering or may soon suffer from storage problems, either faster storage controllers or new systems are ordered.

For example, Sabre recently determined that an aging IBM

Storage, page 33



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Managers unravel tech mysteries

CONTINUED FROM PAGE 31

"platforms, linkages or various plumbing technologies," he said. And Johnson, whose background is in training and operations, would be lost.

So would Nancy Grady, another mutual funds vice president, who said she didn't want to appear stupid by asking too many questions.

Looking back on it, "I think a lot of people were doing what I was doing — just sitting there and nodding," said Grady, who is an accountant by training. "There was definitely a gap."

To bridge that gap, State Street has launched customized training classes for nontechnology managers. Unlike previous training classes that covered the fundamentals of client/server computing, databases and operating systems, the new curriculum covers State Street's operating environment and in-house applications — including the Boston-based bank's proprietary mutual funds systems. So far, about 60 managers have attended the one-day course.

Developed by Technology Resource Group, Inc. (TRG) in Wayland, Mass., the courses also cover what is involved in developing and enhancing applications. That component gives business managers a better understanding of the technology life cycle.

"If a business manager understands what is involved [in enhancing a system], the manager can better manage a client's expectations and also determine if there is a real cost benefit to developing an enhancement," said Jessica Rogers Dill, vice president of management and professional development at the bank. "The goal is to inform managers so that when requests [for system changes] come in, they're not blindly passed around."

Kurt Johnston, an analyst at International Data Corp. in Framingham, Mass., said State Street's training program is another example of "technology becoming so important to business that non-IT workers are again trying to understand what it means for them." To some extent, that happened when companies moved from mainframe to client/server technology. Now with the Internet, "there's a new wave of interest," he said.

An increase in joint application development also is driving business managers back to the classroom, said Sue Goldberg,

AT A GLANCE

Company: State Street Bank & Trust

Headquarters: Boston

Employees: 12,000 worldwide

Assets: $2 trillion

Primary business: Investment banking

president of Northeast Training Group, Inc. in Newton, Mass. "Business managers need to understand the development life cycle, so they know how estimates are derived and what they're signing off on," Goldberg said.

One of the key reasons State Street chose TRG is because it can customize courses for the bank's systems, Rogers Dill said. TRG developers learned about the bank's systems by interviewing application developers and programmers about the bank's technology architecture and platforms.

Bringing in an outside training company is also the most cost-effective use of resources, Rogers Dill said. "We're paying the systems professionals to do their work on network architectures and database design. Those are scarce skills today," she said. "We're much better off bringing in someone whose business is learning more about our technology, then incorporating it into their training."

It is paying off in the mutual funds department where Grady, for one, is no longer shy about asking questions.

"Now I have a much better understanding of technology," she said. "I'm more likely to challenge clients and ask questions and even have them draw a diagram for me. I'm less intimidated. A training class goes a long way."□

Scaling warehouse wall

CONTINUED FROM PAGE 31

text of the greater world," he said.

Average income levels and other consumer demographics can be used to pinpoint choice spots for new stores, while market data lets Sears measure how stores are doing compared with the economy and rival retailers, Beitler said. It also helps executives "tell if a store manager is sandbagging us by lowballing his growth plans," he added.

Other warehousing managers agreed external data can be extremely handy, especially for sales and marketing uses. But they said outside information doesn't come cheap and must be rigorously checked for compatibility with internal data.

MCI Communications Corp. uses customer lists from airlines and other business partners to target joint marketing campaigns at consumers with specific buying habits or interests. Such offers can be up to 30% more effective than shotgun telemarketing or direct-mail campaigns, MCI said.

"We're very hungry for data," said Dave Johnson, senior manager of systems development at MCI's mass markets telephone unit in Denver. But MCI puts the outside lists through heavy-duty preprocessing to make sure customer names, addresses and phone numbers are consistent with its own records.

Marketing analysts also check the external lists upfront to ensure they are current and provide the kind of information MCI wants, including new customer names. "We pay a lot of money for data, and we make sure we're getting some bang for the buck," Johnson said.

The costs of external data aren't for the faint-hearted. For example, National Data Corp.'s health information services unit in Phoenix charges $1 million and more annually for the pharmaceutical data it collects. Trying to extend its reach, National Data last week announced a World Wide Web-based service that leaves data customization to the buyer and costs $50,000 to $600,000 per year.

Transactions make up most of the data First American Corp. warehouses, said Mary Ann Beach, senior vice president of marketing information management at the financial services firm in Nashville.

But the customer information it stores is equal parts internal and external, and the outside data "is the secret to how we make money" on marketing campaigns, Beach said.□

Sabre speeds Y2K tests

CONTINUED FROM PAGE 31

cember. As such, Sabre must be ready to process in the old and new formats and conduct continuous integration testing "to make sure that we stay year 2000-compliant," Freedman said.

Because 40% of its $1.78 billion in revenue comes from sources other than AMR, Sabre's year 2000 program office also must coordinate millennium projects for customers such as Arlington, Va.-based US Airways, Inc. and Canadian Airlines International.

MASSIVE EFFORT

To become millennium-ready by June, Sabre must pore through 200 million lines of mainframe code. It must also help coordinate work among American Airlines, Seattle-based The Boeing Co. and other manufacturers to identify hundreds of date-sensitive embedded systems located in the cockpits of 840 American and American Eagle aircraft. And it must replace or repair the hardware and software that supports 180,000 terminals that connect to its reservations system, among other tasks.

Sabre's massive coordination requirements help explain why the group last summer had to double its original year 2000 project cost estimates — from $30 million to $40 million for 1997-98 to roughly $78 million. Including Sabre, AMR expects to spend about $200 million to fix its year 2000 problem.

Indeed, managing Sabre's year 2000 efforts is like a global game of Twister for Freedman. Besides having to reach out to Sabre customers such as US Airways, Freedman also must constantly touch base with Sabre partners such as British Airways Ltd. and aviation authorities such as the Federal Aviation Administration and the International Air Transport Association.

And Freedman has to make sure that the maintenance equipment in airports that American Airlines flies in and out of is ready to roll. "It won't do us a lot of good if we're [year 2000] compliant and they're not," said Freedman, referring to airports in the U.S., Japan, South America and Europe.

Sabre is using a fleet of third-party tools to address its year 2000 needs, Freedman said. Those tools include Giles 2001 from Duxbury, Mass.-based Global Software, Inc., which Sabre uses to inventory its MVS/IMS environment; the ARC tool from Cap Gemini America in New York, which Sabre uses for software analysis and remediation; and the HourGlass 2000 from Maple Plains, Minn.-based Mainware, Inc., which Sabre uses to spin some of its data past the big date to see how systems react. One bright spot for Sabre, Freedman said, is that it upgrades its reservations systems terminals frequently. Though Sabre will have to replace a small percentage of its terminals, many systems will simply require a BIOS replacement, she said.

AMR "came up on my radar screen as one of the only companies that hurt their stock [price] by announcing they were going to spend $70 million more" than they had planned to fix their year 2000 problem, said Peter Kastner, an analyst at Aberdeen Group, Inc., a Boston-based consultancy. Still, Kastner described AMR as an airline industry leader in the millennium problem area.□

Storage strategy

CONTINUED FROM PAGE 31

3390 disk system was ripe for failure and replaced it with an IBM Ramac 2. "We do not attempt to place a cost impact on letting the system run degraded, as this is not an option that we would accept," said Steve Pierce, vice president of resource management at Sabre.

John McArthur, an analyst at International Data Corp. in Framingham, Mass., said Sabre's approach makes sense in transaction-intensive environments, such as in the travel and banking industries. But for other users, it may seem extreme, he said.

"It's a unique environment where minute-by-minute monitoring is required. But I wouldn't doubt that the average data center manager is spending about 50% of his time on performance monitoring activities," McArthur said.

Finally, Sabre asks its storage vendors to provide customized forecasts of when a proposed device will reach the end of its productive life under the conditions of Sabre's transaction environment.□

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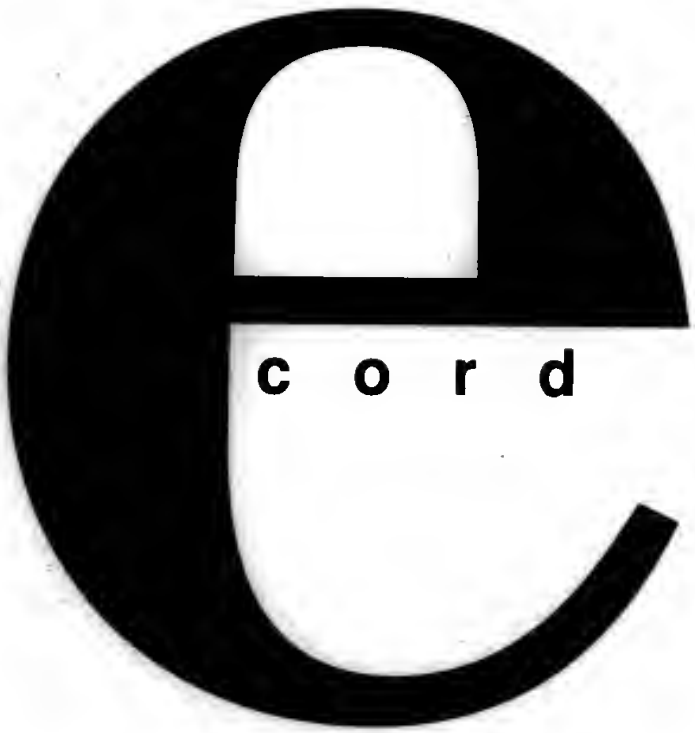

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The Internet

Electronic Commerce • The World Wide Web • Intranets

Briefs

Tracking Web users

Net.Genesis Corp. in Cambridge, Mass., is adding more capabilities to its flagship World Wide Web analysis and tracking product. Net.Analysis Pro 3.5 will offer correlation between data submitted in an online form and a user's subsequent behavior on a site. It also analyzes keywords that users type in to search engines and tracks referrals from ads. It costs $4,495 for Windows NT and $7,495 for Solaris and AIX. Net.Analysis Pro 3.5 will be available this month.

Hoover's doubles sales

Hoover's, Inc. in Austin, Texas, recently announced that personal subscriptions to its financial information Web site have more than doubled in the past six months. Hoover's Online (www.hoovers.com) now has 15,000 subscribers, who pay $12.95 per month to access background information about companies.

Java encryption

RSA Data Security, Inc. in Redwood City, Calif., has released a version of its JSafe encryption engine for Java with faster throughput and better memory management. The new memory management component was designed to increase the efficiency of Java applets and applications. The base price of a license is $15,000.

NET COMMERCE

Electronic commerce sales for U.S. small businesses

*Projected

Base: 1,000 companies tracked

Source: Access Media International, Inc., New York

Users cool to Netscape code

DANNY TURNER

Progressive Insurance CIO Allan Ditchfield: "I would be concerned if someone had the [Communicator] source code here"

▶ *Developers are biting, but others are wary of browser maintenance*

By Carol Sliwa

MAYBE SOFTWARE developers and hackers can't wait for Netscape Communications Corp. to release the source code for its Communicator browser later this month. But user companies aren't racing to get the code, even though many look favorably on Netscape's newfangled idea to spur client innovation.

"I would be concerned if someone had the source code here," said Allan Ditchfield, chief information officer at Progressive Insurance Co. in Mayfield Village, Ohio.

His chief worry? One of his developers might insert a unique twist into the browser that would make it difficult for the company to upgrade to new browsers later.

Ditchfield said he isn't in the business of maintaining source code for commercial products.

Neither is BC Telecom, Inc. in Vancouver, British Columbia. The company had a bad experience making heavy modifications to its mainframe operat-

Netscape code, page 40

Ohio Taxation Department's Tim Martin: The agency keeps its Web site separate from tax systems

Internet security holes widen

By Laura DiDio

IT'S NO SECRET that cybercrime is on the rise.

But security experts said that because of the burgeoning use of the Internet and the emergence of electronic commerce, businesses face an ever-widening array of potential security threats. Hackers' newest and favorite targets include the following:

Hackers don't need to be computer proficient they did 5 10 years ago

- Attacks on World Wide Web servers and browsers.
- Back-door holes into network operating systems.
- Denial-of-service attacks, in which a hacker floods a network server or Web server with data that ultimately crashes the network. Among the most popular are Bonk, Boink, Synflooding, Ping of Death, WinNuke and LandAttack.
- Logic bombs and Trojan horses, malicious pieces of code that can hide in a system or network and are detonated at a specified time.

"We've designated three people in our organization to monitor the latest hacking techniques and advise us on how to guard against them," said an MIS manager at an East Coast brokerage who requested anonymity. "We had to. We got hacked twice in the last year — internally and externally. Fortu-

Security, page 39

PRODUCT REVIEW

▶ *Eudora Pro 4.0*

Eudora is still a great E-mail client

By Lenny Bailes

EUDORA PRO 4.0 is one of the great personal E-mail clients. It offers an intuitive, friendly interface packed with powerful features: sophisticated message filters, support for multiple mail accounts, new voice-mail support and the ability to send and receive HTML-formatted messages.

But Qualcomm, Inc.'s new CommCenter version doesn't have a server product that can provide groupware functions, making the overall product fall short of competitors such as

Eudora, page 39

Micropayments aren't just chump change

By Sharon Machlis

ELECTRONIC COMMERCE

AS COMPANIES search for new ways to generate revenue — and eventually profits — from the World Wide Web, some are pondering "micropayments" as a way to entice consumers to buy information on the Internet. But despite several recent trials, wide-scale adoption of such a model seems distant.

"I am a great believer in the technology. There seems to be some real interest," said Clive Corcoran, president of 411 Transaction Technologies, Inc. in Los Angeles. The company's Music 411 Web site joined Digital Equipment Corp.'s Millicent micropayment pilot test in January. "How long it will take to develop ... I really can't say," Corcoran said.

The Millicent project (*www.millicent.digital.com*) lets consumers have free "cash" in their accounts so they can try the system. The site sells music by the song. The idea behind micropayments is to make single transactions — worth as little as 25 cents — feasible without using credit cards.

Systems to handle micropayments — purchases of newspapers or a single song, for example — are too small to be handled profitably using credit cards and are still under development. Digital in Maynard, Mass.; CyberCash, Inc. in Re-

Micropayments, page 39

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Micropayments

CONTINUED FROM PAGE 37

ston, Va.; and DigiCash, Inc. in Palo Alto, Calif., are among the companies that have released offerings in the arena. And British Telecommunications PLC recently launched a trial.

Typically, consumers must open an account with a micropayment system before using it and then download "wallet" software to use with their browsers. Depending on the system, customers can either run a tab that is paid with a credit card when a set dollar amount is reached or they can buy "funds" to spend later.

Major Web players, such as Time New Media, Inc., say they have been following the technology for years but aren't likely to try it until they see evidence of consumer interest.

The *Wall Street Journal* Interactive Edition, an industry leader in selling paid subscriptions on the Web, has said it would consider offering free, one-day access to its site.

The *Journal*'s site is the Internet equivalent of buying a paper on the newsstand instead of subscribing at home, according to business director Tom Baker.

"When there becomes a way — an affordable way — to collect a dollar from somebody [over the Internet], we will," he said. Micropayment schemes already exist, he said, but none are standard in browsers and few consumers have software for any micropayment plan.

But ESPN SportsZone, one of the most popular sites on the Web, was pleased with a micropayment trial it conducted last year with CyberCash.

"It's something we feel we will do in the future, particularly around big events," said Brian Ratzlifs, manager of business development at ESPN Internet Ventures in New York. Someone who doesn't want a monthlong premium subscription to the site might be interested in a $1 daylong pass to the site during the Super Bowl.

"The technology last year wasn't quite as seamless as we would have liked it to be, but I think that technology is improving significantly," Ratzlifs said. "We were intrigued by the results and think that [this is] a niche of customers that that kind of model would appeal to."

Datamonitor, a London-based research firm, recently estimated that by 2002, micropayments could account for 12% of the total projected U.S. online purchases of $12.5 billion.

Critics said it will be hard to generate consumer interest for a new payment scheme. "Anything over a $10 amount, people are going to use their credit cards," said Cliff Condon, a senior analyst at Forrester Research, Inc. in Cambridge, Mass. "Most things of very little value on the Internet are given away for free." □

MICROPAYMENT DEBATE

Pros:	Cons:
+ Web sites can sell information or products in small slices – per article, computer game session, digital song, etc.	- Users have to sign up for micropayment accounts
+ Consumers don't have to worry about using credit cards or opening an account at an unknown site	- Various micropayment schemes aren't compatible; vendors have their own standards
+ Vendor doesn't have to track and authorize users and credit cards	- Micropayment accounts often involve extra software downloads and plug-ins
+ Potential new revenue stream that doesn't rely on subscriptions or advertising	- Consumer acceptance is still unproven
	- Handling fees for small transactions can make some sites less profitable

Eudora

CONTINUED FROM PAGE 37

Microsoft Corp.'s Outlook and Lotus Development Corp.'s CC:Mail. I found this version of Qualcomm's popular product to be efficient as a personal tool for gathering and managing Internet correspondence, but I wouldn't choose it as the default electronic-mail client for an enterprise network.

Eudora Pro 4.0 supports Post Office Protocol-3 and Internet Message Access Protocol 4 (IMAP4) mail servers. Although it can function as an intranet mail client, it is less attractive as a groupware tool. It lacks features to route personal scheduling information, distribute documents through shared network folders or display custom forms and correlate responses.

Eudora Pro 4.0 CommCenter is an enhanced version of the basic product that adds several Internet services: fax capabilities, newsgroup access and a free Internet paging/conferencing utility. By integrating IMAP4 and Lightweight Directory Access Protocol (LDAP) support into Eudora Pro and offering users a fax-enabled mailbox, Qualcomm hopes to attract the enterprise buyers who want a universal in-box.

The base E-mail client is a fine upgrade. It adds the ability to view messages sent as Hypertext Markup Language (HTML) documents, new tool windows, voice mail, and IMAP4 and LDAP support — to a rich, user-friendly interface.

Eudora Pro 4.0 is bundled with Microsoft's Internet Explorer 4.0 browser and Apple Computer, Inc.'s QuickTime extensions, both of which you may add to your desktop during installation. This enhanced display support may be a welcome feature for some users, but the best part is that it is easy to disable if you don't want it.

NEW FEATURES

The voice mail, Eudora PureVoice, lets you create and attach voice recordings to E-mail messages. The proprietary Qualcomm format for these attachments condenses sound files to about one-tenth the size of standard Windows 95 .wav files.

The Eudora Pro 4.0 mail client is easier to configure and more accessible than the previous version. A built-in wizard walks you through account setup, and settings can be imported from an Outlook, Outlook Express or Netscape Communications Corp. mailbox configuration.

The Eudora Pro interface includes a series of convenient filter options that can automatically shunt mailing list correspondence and other specialized messages into preconfigured mailboxes or folders. Another new feature is a Make Filter wizard that automates the creation of message filters for novice users. Eudora Pro's address book can be used to set up multiple address listings that contain E-mail addresses, postal addresses, telephone/fax numbers and a comment field.

The fax and voice mail service in the CommCenter edition of Eudora Pro lets you transmit, receive and manage faxes or voice mail through the Eudora interface and a subscription Internet account.

The service is free for three months and then costs $12.50 per month. Qualcomm's Internet Pager is a text-only utility that is unsophisticated compared with chat software such as Microsoft's NetMeeting or Mirabilis Ltd.'s ICQ.

Eudora Pro's clean, full-featured interface continues to recommend it as the personal E-mail client of choice, but the Internet services that Qualcomm has bundled into CommCenter don't match the functionality of other enterprise client/server packages. □

Bailes is a writer, teacher and consultant in the San Francisco Bay area. He is the author of The Byte Guide to Optimizing Windows 95.

PRODUCT REVIEW

▶ *Eudora Pro CommCenter, E-Mail 4.0*

QUALCOMM, INC.
San Diego
(619) 658-1914
www.eudora.com

QUE'S GRADE: B — CommCenter

QUE'S GRADE: A- — E-Mail

Price: CommCenter, $59; E-mail, $39

Pros: Easy-to-use interface, sophisticated message filters, IMAP4 server support

Cons: Lack of integration with a server that can deliver groupware functionality

Security holes get wider

CONTINUED FROM PAGE 37

nately, we caught them early, and we suffered no appreciable damage."

What makes these threats even more scary is that today's hackers don't have to be nearly as computer-proficient as their predecessors from 10 or even five years ago, said Chris Klaus, chief technology officer and founder of Internet Security Systems, Inc. in Atlanta.

"Would-be hackers have lots of help these days. All they have to do is search the Web and download reams of data with step-by-step instructions on how to perpetrate various hacks," Klaus said. A query on how to launch a denial-of-service attack turned up 17,000 matches on Digital Equipment Corp.'s popular AltaVista search engine alone.

SAFETY METHODS

Mark Pollitt, a supervisory special agent at the Federal Bureau of Investigation in Washington, said although no network is impregnable, there are safe computing guidelines that make it hard for hackers to access a company's data.

"Never, never store all your data in one place or give any one person access to all the information. And wherever possible, restrict access to mission-critical applications on a need-to-know basis," he said.

That's exactly what Tim Martin, a network administrator at the Ohio Department of Taxation in Columbus, is doing.

Martin said his agency is well aware of the potential security threats posed by the Internet. It uses a combination of Microsoft Corp.'s Windows NT and Internet Explorer, Netscape Communications Corp.'s Navigator and Proxy Server and IBM's Internet Firewall.

"We've also intentionally made sure our Web site is separate from and sits outside our administrative tax network to ensure that no one can access sensitive tax data," he said.

Pollitt advises users to regularly document all system and network configurations, databases and files.

If your system is hacked into, "you can use the differences to determine what the hacker has done, identify the actions [and] the crime, recover your data and prosecute the hacker," Pollitt said. □

Users cool to Netscape code

CONTINUED FROM PAGE 37

ing system, said Rick Waugh, a senior systems analyst at BC Telecom.

"It ends up being expensive. You have to make sure all the changes you've made are compatible with the new version of the operating system or with new versions of software that are compatible with the operating system," Waugh said. "I would look at this as the exact same thing."

For many corporations, there are more pressing issues than innovating the World Wide Web client. "In corporate computing, the last thing you want to do with a vendor's product is alter it so it can't be supported," said Sherman Woo, a director of US West Communications, Inc.'s Global Village intranet.

Woo said he is content to wait for improvements in the branded version of Netscape's product. Although Netscape has yet to finalize licensing terms for the source code, tentative plans call for innovations to be turned back to the company for possible incorporation into a future branded version of the product.

"By giving away the free source code, it means that some kids in garages can go out there and play with a whole bunch of ideas," Woo said. "And if they develop something pretty cool and send it back to Netscape, then they'll put their official stamp on it and we'll buy it."

A Web consultant at a major auto manufacturer said his company is interested in the source code to bring server-side modifications, such as homegrown security features, to the client. But the company still wouldn't deploy it widely unless Netscape or another company added the features to a branded product and provided support, he said.

Yet despite such reservations, most corporate users said they like the idea of Netscape opening up development of its client to the Internet community.

David Sims, technical manager at Schlumberger Ltd. in Sugar Land, Texas, said he likes the freely available Linux operating system that he uses. The Linux model is one of several that Netscape officials are studying.

"It's good to get the international freelance developer community to ding on [the browser] a bit — get the bugs out and make it work right," Sims said. "Then, we'll have one more building block that works flawlessly, and that's going to do good things for corporate people." □

Code central on Web

Netscape last week launched a Web site to foster open development of the Communicator 5.0 source code, which it plans to make freely available by the end of the month.

The site, *www.mozilla.org*, is intended to serve as a hub where developers can access information, download the client source code, post code enhancements, report bugs and participate in newsgroup discussions.

Netscape assigned a dedicated team of staffers to help guide developers, run the Web site and monitor the company's open source code initiative.

Before making the developer release of its client source code available, Netscape plans to post a beta version of the licensing terms to get feedback from interested parties, officials said.

— Carol Sliwa

The Enterprise Network

LANs • WANs • Network Management

Briefs

NT modem package

Artisoft, Inc. in Tucson, Ariz., recently began shipping Artisoft ModemShare 32, a software package that allows Windows NT 4.0, Windows 95 and DOS machines to share a single telephone line and modem. ModemShare 32 also allows administrators to keep a single log of all network communications activity by user name and network address. ModemShare 32 costs $179 for the one-modem version.

Panda certification

Panda Software, Inc. in San Francisco last week became one of the few companies whose antivirus package is certified by both the International Computer Security Association and West Coast Labs of the U.K.'s CheckMark certification. Panda Anti-Virus can detect a wide range of viral infections including the older boot sector viruses, newer Word macro viruses and in-the-wild infections. Users can download evaluation copies of Panda's antivirus products at www.pandasoftware.com.

Outlook on voice

Kirkland, Wash.-based Applied Voice Technology, Inc. (AVT) next month will ship Desktop Message Manager for Microsoft Corp. Outlook, which allows users of AVT's CallXpress unified messaging software to manage voice, fax and electronic mail from an Outlook client. It costs between $75 and $200 per seat.

LAN GROWTH

- Overall sales of shared hubs and LAN switches grew 15% last year to $9 billion
- Port shipments of LAN switches continued to show triple-digit growth last year (155% over 1996), reaching 22 million
- Sales of LAN switches alone increased 50% to $5.7 billion last year

Source: Dell'Oro Group, Portola Valley, Calif.

THOMAS W. BROSE INC.

The MacManus Group's Craig Metzler says a VPN eliminates E-mail delays that "really bogged things down"

net promotes teamwork

▸ *Links produce productivity gains at media company*

By Bob Wallace

INFORMATION SYSTEMS people at global media company The MacManus Group pitched a virtual private network (VPN) as a way to save money. But what they found was that productivity gains outweighed cost savings.

The company's 18-site VPN replaced courier services, dial-up connections and low-speed frame-relay links that have kept far-flung offices from working on large international accounts in a timely manner. The VPN is successful enough that MacManus plans to connect at least 30 more offices by year's end.

"The real business benefit we're realizing is that we can collaborate rapidly as a global company, which is important because we could have staff in 75 to 80 offices working on a global account such as Procter & Gamble," said Craig Metzler, a regional information technology director responsible for global communications at New York-based MacManus. "In the past all we could do was send electronic mail, which wasn't real-time."

That's because E-mail was collected until there was enough to justify an expensive

Virtual net, page 42

Networking nightmare leads to fix

By Matt Hamblen

FORMER U.S. MARINE Larry Carpenter, 51, waded into networking hell when he landed a job as technical services manager at health care provider Carondelet Health Network in Tucson, Ariz., two years ago.

Just before he hitched up, a drunken driver ran over a roadside network box, cutting off voice and data services at Carondelet's two Tucson hospitals for more than a day. Shortly after Carpenter's arrival, a vital T1 concentrator crashed, cutting voice traffic for four days.

Because Carondelet had no service agreement with the carrier that supplied the line, Carpenter had to replace the concentrator himself, which meant scouring the country for a replacement part.

Those disasters pushed Carondelet's management to spend $1.8 million on an upgrade designed to make its network more stable, let it roll out services and help reduce costs. The health care provider is replacing its Point-to-Point Protocol (PPP) copper T1 wide-area network with an Asyn-

Networking, page 44

JC Penney predicting, not reacting

▸ *Analysis tools help; network managers, developers team up*

By Patrick Dryden

NETWORK MANAGERS at JC Penney Co. first learned they were responsible for a bandwidth-gobbling application when they got a trouble ticket.

Users had called the help desk complaining about slow response time for a new, internally developed client/server merchandising program.

Business managers had hoped the application would help JC Penney, which analysts say is the largest U.S. department store chain, overcome its third year of flat market share and stave off rivals such as Sears, Roebuck and Co.

But repairing applications to make them work properly after rollout required costly delays to fix software or upgrade networks.

To keep ahead of such problems, JC Penney's developers, users and network planners are trying to look forward and predict rather than react. Through cooperation and analysis tools, they try

JC Penney, page 42

CARLOS HORTA

Cisco strives to secure the enterprise

By Bob Wallace

CISCO SYSTEMS, INC. recently added new weapons to its arsenal of network security products by acquiring intrusion-detection device maker WheelGroup Corp. for $124 million.

San Antonio-based WheelGroup makes NetRanger, a hardware/software probe that detects unauthorized attempts to access networks and notifies information systems managers. It can instruct Cisco routers and firewalls to block further attempts from specific addresses within or outside the user company.

The 3-year-old company, which has 75 employees, also has developed NetSonar, a product that scans for network security gaps throughout corporate networks and offers managers options for plugging them.

"Cisco's strategy is to secure enterprise networks by integrating a variety of security products, which will reduce the complexity of the corporate

Cisco, page 42

Virtual net promotes teamwork

CONTINUED FROM PAGE 41

international dial-up call to a regional network hub. "The problem was batches were only sent about four times a day," Metzler said. "We had no way of knowing when people were getting their E-mail, which really bogged things down."

MacManus recognized the need to boost bandwidth and replaced a 64K bit/sec. frame-relay pipe in London with a dedicated 2M bit/sec. connection to its Internet service provider. For the same price, it got a link from a service provider to the Internet and 32 times the capacity it had before, Metzler said.

The company also replaced a 64K bit/sec. frame link in Hong Kong with a dedicated 512K bit/sec. service provider connection to the Internet and got eight times the capacity, while saving about $30,000 per year at the Hong Kong site alone. The company uses the Internet as a backbone and encrypts its traffic using security firewalls from Check Point Software Technologies Ltd. at each site.

The added bandwidth enables MacManus' offices to perform file transfers, "which is a huge benefit when teaming on account projects," Metzler said. For example, file transfers enable offices in Los Angeles and Sydney, Australia, to electronically exchange photos for print ads while working on the same account, Metzler said.

"Before, it was difficult to collaborate and communicate on a particular ad campaign that a client was looking to run around the world," said John Betley, a senior vice president and managing director at MacManus. "Now we can put [together] teams of key individuals around the world to collaborate on projects and provide them virtually instantaneous access to the information they need over a fully secure network. [The VPN] has helped us strengthen client relationships by providing better service on a worldwide basis."

When selling the VPN project to regional management, however, Metzler stressed savings, not productivity. When trying to get the time of management at foreign offices, he emphasized the potential for reduced wide-area network charges.

"Talk of potential cost savings got us in the door at the international offices, but what really sold the locals on the VPN was the benefit of being able to better work with other offices on accounts," according to Metzler.

The ability of far-flung offices to have fast input on account projects is becoming more important as corporations change the way they choose to have their products and services promoted, said John McCarty, an assistant professor of marketing at American University in Washington who studies trends in international marketing, advertising and promotions.

"Many companies had wanted a local [agency] office to handle advertising and marketing for [each] country, but there's a trend toward taking a consistent message across multiple countries and cultures," McCarty said. "And that requires far more coordination on the part of the media company. The ability to communicate quickly is critical for coordination purposes."

MacManus is at the forefront of media companies that use high-speed networks to foster real-time collaboration, McCarty said.

"There's a definite trend toward [implementing] them that everyone will follow," he said. □

JC Penney predicts

CONTINUED FROM PAGE 41

to understand an application's behavior and its impact on the network before rollout.

"We saw the need for better planning after all the little problems accumulated and killed us," said Jim Ralston, network capacity planner at JC Penney in Plano, Texas.

Application performance issues kept popping up, draining resources, obscuring the big picture and complicating long-range growth plans, according to Ralston.

A COMPETITIVE MOVE

The retailer needs more efficient information systems to help meet corporate goals. Although still large, JC Penney's market share hasn't grown since 1994, yet old and new competitors have claimed incremental market growth, according to analysts at Bear Stearns & Co. in New York.

Recently, JC Penney information systems groups applied an early performance analysis process to speed implementation of a new telemarketing application.

During the development stage, developers and network managers teamed earlier than they had in the past, first testing the software in a controlled LAN environment.

They captured client/server transactions with a Sniffer protocol analyzer from Network Associates, Inc. Then they fed that data to Application Expert from Optimal Networks Corp. so they could visualize all parts of the complex exchange.

Next, they examined how it would perform across slow wide-area network links, with analysis software from Emcom Corp. in Plano, and predicted usage and growth with Optimal Networks' Performance simulator.

They discovered that file sizes were larger than expected because of internal spacing. Developers were able to condense files so they would travel more efficiently across networks.

They also discovered a problem that couldn't be fixed so easily.

The application's network overhead was higher than its data payload because of the way distributed systems must communicate. Each user query generated unexpected requests to a domain name server and numerous commands to open and close access sockets on the mainframe.

The administrator at the beta test site in Milwaukee figured out a solution. Caching this information at the site's entry point would keep requests from being broadcast across the WAN and reduce the traffic overhead, saving precious bandwidth and improving performance for users.

That process should be easier next time because the rollout team is now more familiar with the tools and has learned to pull out the specific details they need, Ralston said.

Ralston credited Optimal's Application Expert for speeding the testing process. Examining packet traces used to take three to five days, "but now I can determine what's happening in 15 minutes," he said.

DETAILS, DETAILS

Tools such as Optimal Networks' Performance took a long time to apply properly because they could be applied to do too many details, he said.

The team also has learned to more closely track usage patterns to take into account users who run one function every 30 minutes and others who do the same thing every 30 seconds. "Paying closer attention to usage patterns lets us build better projections," Ralston said.

JC Penney isn't unique in its attempt to prevent such problems with new applications, according to Steven Foote, research vice president at Hurwitz Group, Inc., a consultancy in Framingham, Mass. The trend is growing as competition among networked businesses drives their once-separate groups to work closer and to shift performance-monitoring software down to the development environment, Foote said.

"Nobody can afford to wait until rollout to find problems," he said. □

Cisco wants security

CONTINUED FROM PAGE 41

security environment," said Phillip Carden, managing consultant at Renaissance Worldwide, Inc., a Newton, Mass., consulting and research firm.

The acquisition enables Cisco to round out its security product line, which already includes firewalls and security servers, he said.

Last year Cisco launched the Cisco Security Alliance, a group that includes Microsoft Corp., Hewlett-Packard Co. and VeriSign, Inc.

Cisco is working to simplify security by building standards-based security features into networked clients, servers and networking devices.

Cisco's continued efforts and product introductions on the security front place it well ahead of internetworking rivals 3Com Corp., Cabletron Systems, Inc. and Bay Networks, Inc., Carden said. "It's safe to say that Cisco is much more focused on security than the other three."

Cisco hasn't yet released its pricing for the WheelGroup products. □

NEW PRODUCTS

LANART CORP. has announced the EXC0015, a 10Base-T to 10Base-FL converter for twisted pair to fiber media connectivity.

According to the Needham, Mass., company, the converter facilitates data transmission regardless of cable crossing requirements by identifying connected cables as either crossed or uncrossed and then matching the configuration accordingly. It includes LinkAlert software, which monitors uplink and downlink failures and alerts network administrators to transmission faults.

EXC0015 costs $249.

LANart
(617) 444-1994
www.lanart.com

SEAGATE TECHNOLOGY, INC. has announced NerveCenter 3.0, client/server software for network event correlation in mixed Unix and Windows NT environments.

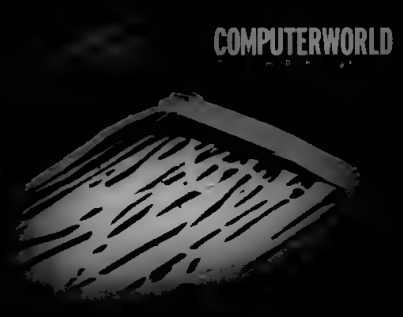
According to the Scotts Valley, Calif., company, the software supports one centralized NT/Unix management console and can be distributed throughout enterprises with remote sites or branch offices.

NerveCenter 3.0 has improved network behavior modeling capabilities, intelligent network polling and remote management support. Enhanced integration with Hewlett-Packard Co.'s OpenView and IBM's NetView network management platforms also is included.

Pricing ranges from $2,195 for a single server and 10 nodes to $24,995 for a single server and unlimited nodes.

Seagate Technology
(408) 438-6550
www.seagate.com

Roadmap



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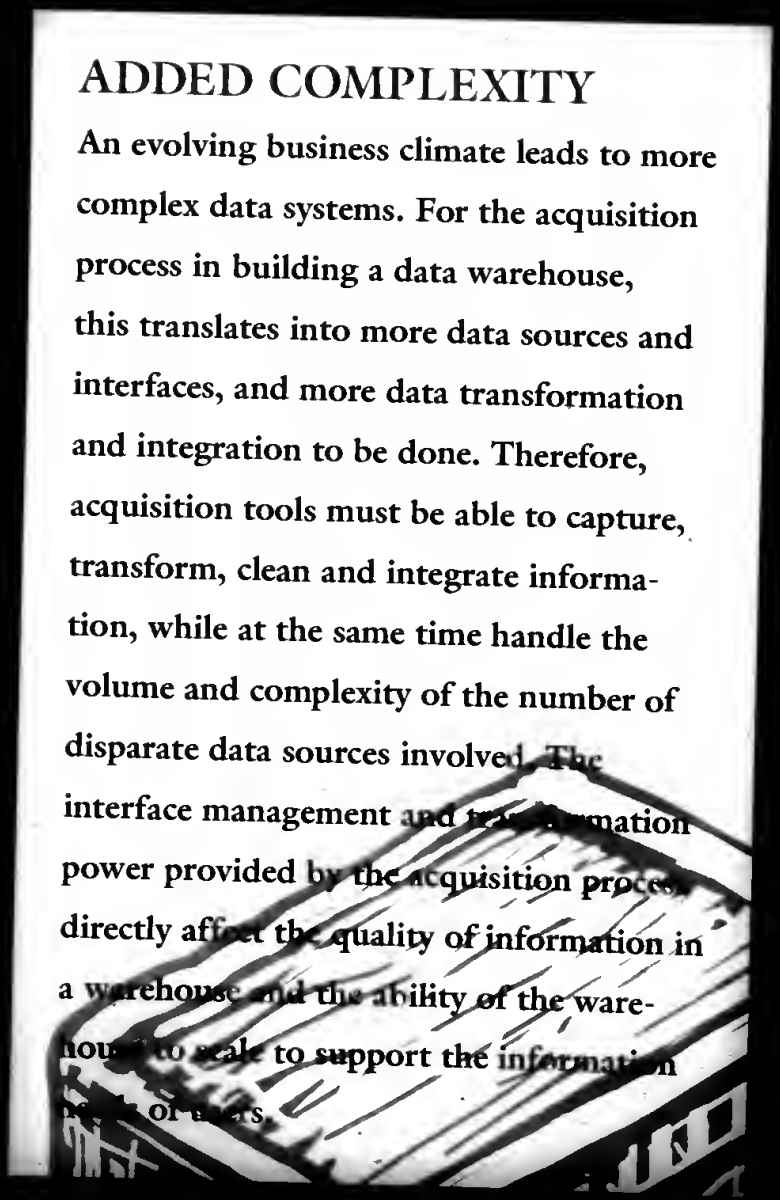
ADDED COMPLEXITY

An evolving business climate leads to more complex data systems. For the acquisition process in building a data warehouse, this translates into more data sources and interfaces, and more data transformation and integration to be done. Therefore, acquisition tools must be able to capture, transform, clean and integrate information, while at the same time handle the volume and complexity of the number of disparate data sources involved. The interface management and transformation power provided by the acquisition process directly affect the quality of information in a warehouse and the ability of the warehouse to scale to support the information needs of users.



IN REVIEWING THE REQUIREMENTS OF ACQUISITION TOOLS, THE FOLLOWING SCALABILITY CONSIDERATIONS NEED TO BE TAKEN INTO ACCOUNT:

- ***The data sources supported by the capture component*** (See Requirement 4, reverse side) The capture component must be able to handle the wide variety of data sources used in corporate systems today. This component should also provide an architecture that supports the running of multiple acquisition steps in parallel (Requirement 5).

- ***The data transformation facilities provided.*** In comparing products, one of the more difficult tasks is evaluating the power and capabilities of the transformation component. This component should support a wide range of transformation algorithms (Requirement 7), including record restructuring, field-level decoding, validation and lookup, and set-level transformations and validation. The transformation component should also allow user-written extensions (Requirement 14).

- ***The ability to load information efficiently into one or more information stores.*** Of all the steps involved in the acquisition process, the load component has the biggest impact on performance, and therefore should be able to load information in parallel (Requirement 13), and support a variety of loading methods (Requirement 11) and modification modes (Requirement 12).

- ***The scheduling and workflow capabilities for managing the synchronization of capture processing*** (Requirement 15) As the number of data sources increases, it becomes impossible to manually coordinate and control the running of acquisition jobs. Acquisition tools should provide scheduling and workflow tools to automate capture operations.

- ***The facilities for managing errors that occur during acquisition*** (Requirement 16) Requirements for managing errors include guaranteed integrity between source systems and the information store, re-start of the capture, transport and load components after a failure, error/discard file for storing error records, a GUI-driven tool to analyze/fix error records, and the ability to control acquisition operations through the use of error thresholds.

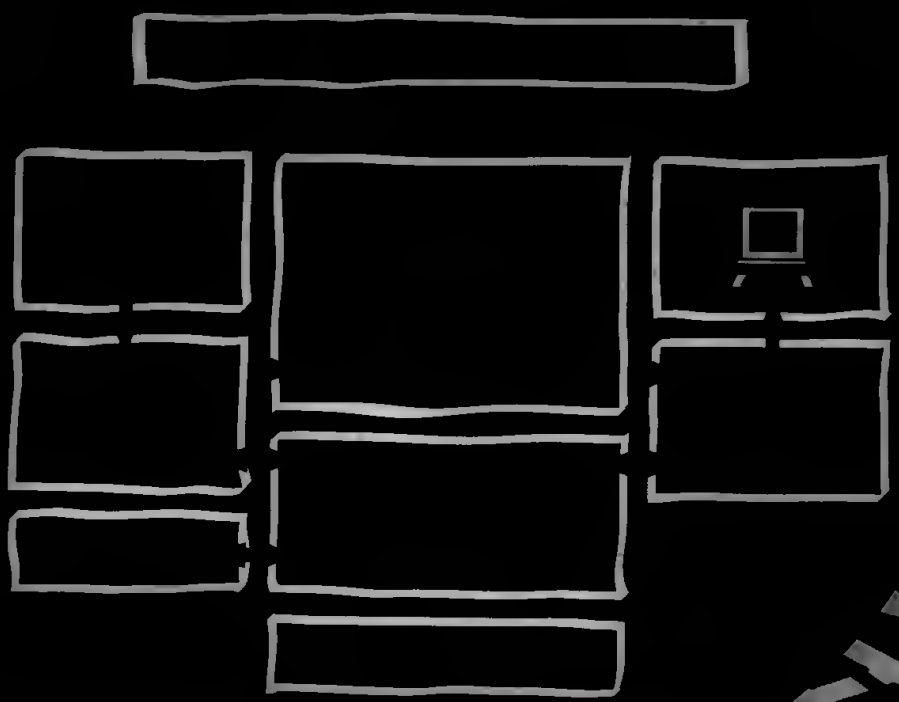
- ***The architecture of the acquisition subsystem*** (Requirement 17) There are many different types of acquisition tools, including code generators and data replication products. The biggest growth recently has been in the area of rule-driven information store builders such as D2K Tapestry, IBM Visual Warehouse, Informatica Powermart, Information Builders SmartMart, Oracle Data Mart Suites, Platinum Technology InfoPump, Sagent Data Mart Solution and VMark Data Stage.

Many of these information store builders use an intermediate server for acquiring data from remote source systems and loading the information into a remote information store. These intermediate servers come in four

flavors: 1) a single intermediate server that processes one request at a time; 2) multiple intermediate servers, each of which can process one request at a time; or 3) a single/multiple intermediate server architecture that employs multi-threading for processing multiple requests in parallel. In some cases, the server may be able to use multiple threads to process a single acquisition request in parallel. The fourth possibility is an intermediate server, which is used to manage the moving of information directly from the source systems to the information store, without the need for the information to pass through the intermediate server. Such an architecture should provide the administrator with workload balancing options for managing the number of threads/tasks used to handle data acquisition operations. This type of architecture will provide the best overall performance and scalability.

- ***The use of staging tables to manage the data acquisition process*** (Requirement 18) Many products capture data from source systems and load it into an information store in a continuous data stream. This streaming approach works fine when only a few data sources are involved, but becomes unmanageable if the acquisition process needs to be scaled up to handle a large number of data sources. The solution to this problem is the use of a staging area to coordinate and integrate information flowing from different acquisition jobs, so that errors can be fixed before the information is loaded into the information store.

Building a Data Warehousing System



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anagement
Process
Information
Management
Subsystem
Metadata

2 Criteria Selecting rehousing Products

Which specific features does the design tool support (e.g., [illegible] design, provision of generic data models, etc?
Does the tool support data models templates for extracting data from application packages, e g , Peoplesoft, SAP?
Is a prototyping capability provided that does automated design [illegible] business specification or existing data structures?

Which data sources are supported by the capture component?
Can data be captured from multiple source systems in parallel?
Does the capture component support the capture of source data changes?
Which record- file-, set-level data transformations are supported?
Which middleware is used by the transport component?
Does the transport component support compression or encryption?
Which information store database and file systems are supported by the load component?
Which methods does the load component support for adding information to the information store (DML statements load interface load utility, parallel loader)?
Which modification modes does the load component support (refresh update, append)?
Can information be loaded into one or more information stores in parallel?
Can user-written extensions be incorporated into the acquisition subsystem?
Which scheduling and workflow capabilities exist for managing the synchronization of data capture processing?
Which facilities exist to manage errors that occur during acquisition?
Which architecture is used by the acquisition subsystem?
Are staging tables supported by the acquisition subsystem? If so what DBMS file system is used to manage these tables?

Which relational DBMSs (RDBMSs) can be used for maintaining the information store?
Does the RDBMS provide partitioning where data can be spread across multiple partitions or disks?
Can the RDBMS process DML statements (query, insert, update and delete) in parallel, taking advantage of partitioning?
Can the RDBMS execute utilities such as data loading, index building, and backup and recovery in parallel to improve performance?
Which multidimensional DBMSs (MDBMSs) can be used to maintain the information store? Do these MDBMSs provide an analytical server that allows access to information stores managed by both a relational and a multidimensional storage manager?

Is an information directory provided to manage technical metadata? Business metadata? Statistical metadata about warehouse operations?
Which DBMS file system is used to manage the information directory?
Which tools interfaces are used to maintain metadata in the information directory?
Which metadata interchange methods are provided to exchange and synchronize metadata with other products?
Does the information directory have a documented and extensible metamodel?

Are tools available to control, monitor and tune acquisition operations?
Are statistics about acquisition operations stored in the information directory?
Are tools available to control, monitor and tune distribution operations?
Are statistics about distribution operations stored in the information directory?
Which authorization and security controls exist for managing access to the information store and information directory?
Which tools are available for information store and information catalog management (backup, recovery, archiving, growth management)?
Which tools are provided for service-level management (service level definition and tracking managing and monitoring warehouse operations

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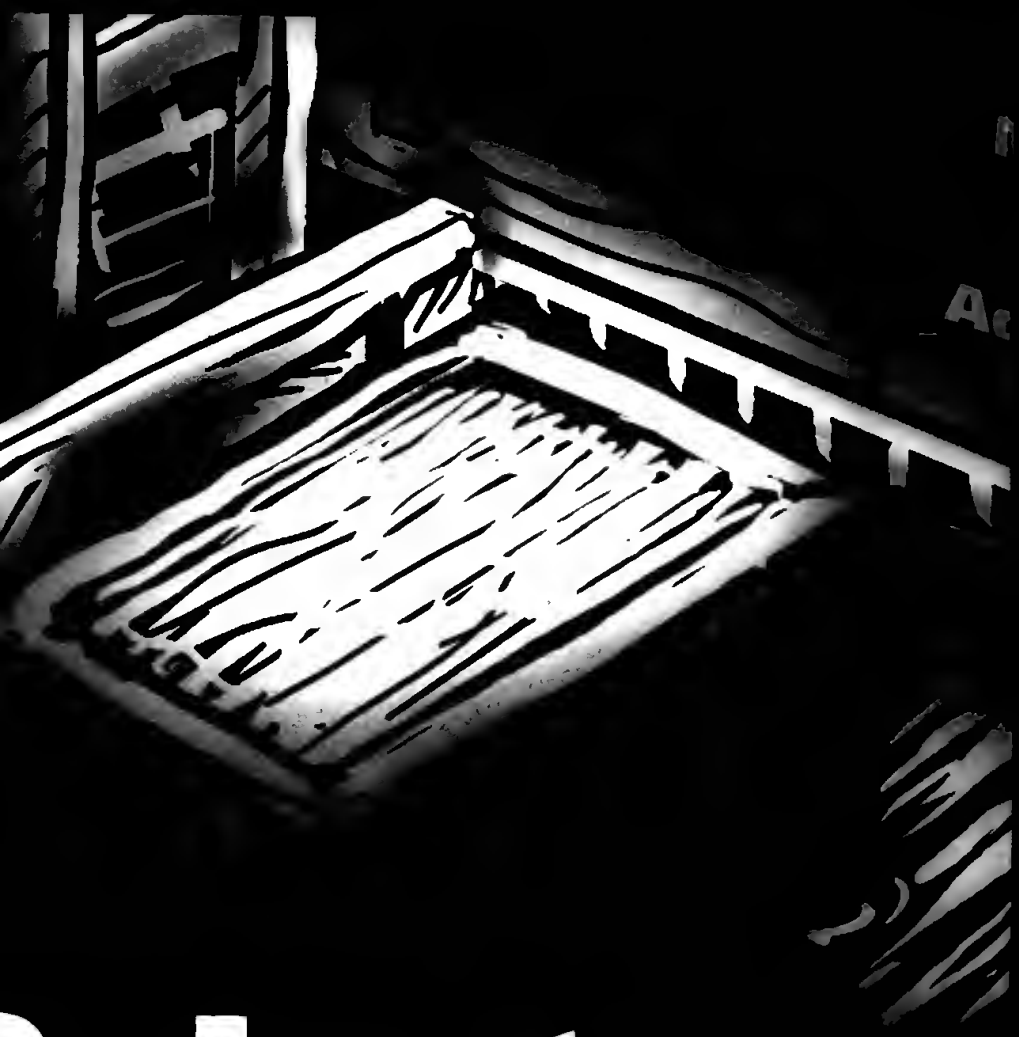

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Are tools available to control, monitor and tune acquisition operations?
Are statistics about acquisition operations stored in the information directory?
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Are statistics about distribution operations stored in the information directory?
Which authorization and security controls exist for managing access to the information store and information directory?
Which tools are available for information store and information catalog management (backup, recovery, archiving, growth management)?
Which tools are provided for service-level management (service level definition and tracking, managing and monitoring warehouse operations and performance, accounting and auditing, problem tracking)?
Is a central management capability available to manage multiple information stores?

Which GUI and Web-based decision support tools (query and reporting OLAP, data mining) are available?
Which middleware is used for DSS tool access to the information store?
Does the access middleware provide special features for managing information access by business users?
Do DSS tool vendors provide metadata import/export interfaces to the information directory?
Does the product provide an information assistant that allows the user to launch pre-canned OSS objects that have been published to the information directory?

Does the product include a publish/subscribe model for delivering information to business users?
Which middleware is used by the information delivery process?
Which external systems (Web server, DBMS, e-mail) and file formats are supported by the information delivery process?

ertising Insert

DataBase Associates International

DATABASE ASSOCIATES INTERNATIONAL

This poster was developed by Colin White, founder and president of DataBase Associates International, Inc., a consulting and training company specializing in database systems, data warehousing, distributed computing, and the Web-enablement of enterprise systems. For more information see our Web site at www.dbeint.com or contact P.O. Box 310, Morgan Hill, CA 95038; (408) 779-0436; fax (408) 779-3274.

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Networking nightmare

CONTINUED FROM PAGE 41

chronous Transfer Mode (ATM) Synchronous Optical Network (Sonet) ring. It will connect Carondelet's two Tucson hospitals and a third in Nogales, Ariz., and replace its PPP copper T1 WAN frame relay network that connects its 16 other clinics, retirement homes and offices throughout Arizona to the ring.

"The execs realized they were about 10 years behind and needed to spend on infrastructure," Carpenter said. "Nobody plans for a disaster until afterward, and it's amazing how good the planning gets ex post facto."

If the fiber cable is split in another disaster, the Sonet ring will reverse the traffic so it can still reach its destination.

The ATM Sonet ring has eliminated the costly single-point-of-failure problem at far less cost than building two Sonet rings without the ATM, Carpenter said.

"It's hard to put in hard dollars the benefits of the upgrade, but there were so many," he said. "The old network took up to three days to route information about charges from 200 nurses stations and other areas to central accounting; the new network instantly communicates laboratory, pharmacy and other charges."

"Even now, it takes 12 to 15 minutes to admit a patient, but that's down from half an hour, which is better for us and the patient," Halfen said.

Carpenter said that he, a small staff and vendor representatives pulled several all-nighters to upgrade the network in less than a year. Even so, part of the network and many applications are still in the works. To make it happen, Carpenter said, he "holed up with the technical staff [from] my vendors for about six months."

Vendors included Brooks Fiber Properties Inc., now a part of WorldCom, Inc., and US West Inc. Lucent Technologies, Inc., installed $500,000 in ATM switches from Bay Networks Inc.

Carondelet's Larry Carpenter: "Nobody plans for a disaster until afterward"

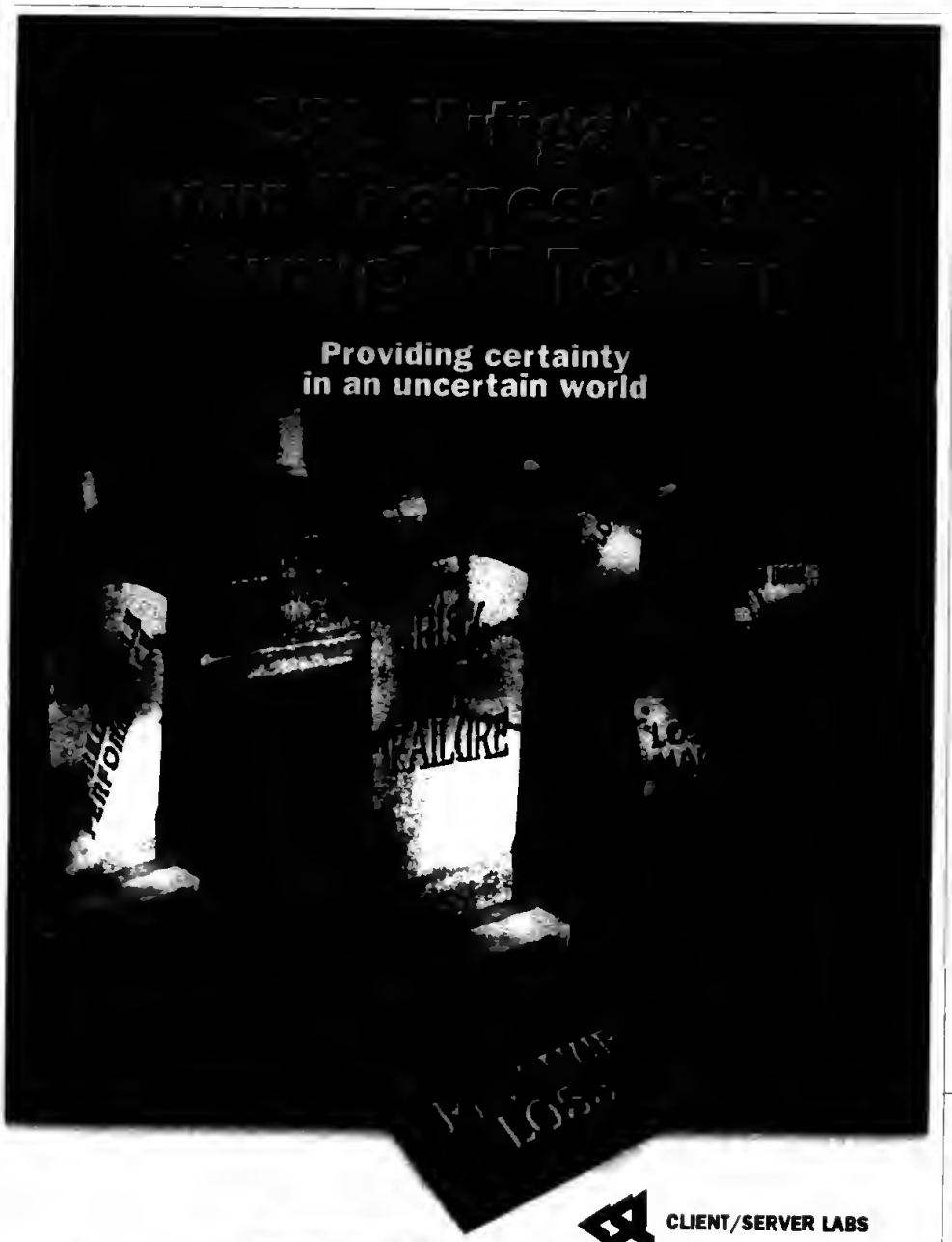
The upgrade has tripled bandwidth to 155M bit/sec, letting Carondelet use videoconferencing to cut down on travel. Within a year, it wants videoconferencing to let doctors remotely examine prisoners in 10 prisons under a state contract.

The new bandwidth will let other applications replace a cumbersome paper process, officials said. One hospital's patient records will be shared over a network, letting staff in different locations more easily compare notes, said Joel Gray, a nurse and systems assistant.

Because of the upgrade, a customer can call one number and order medication, schedule a visit to a doctor and get billing information, Carpenter said. Before, it might have taken three calls.

Another program lets administrators follow the status of rooms, noting when a room is empty or needs repair. Health care information technology analysts said Carondelet is making the changes necessary to improve patient care and reduce costs.

"It sounds like they've installed the network they need for the future," said Vikram Nair, an analyst at Arthur D. Little, Inc. in Cambridge, Mass. □



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Briefs

KEYS TO SUCCESS

Top factors that keep data warehouse projects on track.

- User involvement
- Clear objectives
- Vendor consulting help
- Limited project scope
- Executive commitment

Base: 60 data warehousing sites

Source: The Standish Group International Inc., Dennis, Mass.

Monitoring Oracle apps

Precise Software Solutions, Inc. in Braintree, Mass., this week plans to announce an upgrade of its performance monitoring and tuning software for applications running on Oracle Corp. databases. Precise/SQL 2.6 can be linked to systems management consoles and has new support for the Oracle8 database and Windows NT versions of Oracle's software. The upgrade is available now and costs $15,000 per database server on Unix platforms.

Warehouse update

Platinum Technology, Inc. last week released new versions of its three data warehousing tools. The rollout included InfoBeacon 4.0, an upgrade of Platinum's online analytical processing software with World Wide Web support and beefed-up administrative features. Prices start at $45,000. Platinum, in Oak Brook Terrace, Ill., also updated its InfoReports reporting software and Forest & Trees development tool for decision-support applications.

Informix enhancement

Informix Software, Inc. in Menlo Park, Calif., last week announced an upgrade of its Data Director database development software that supports Microsoft Corp.'s Visual Basic 5.0 programming language. Version 3.0 of Data Director for Visual Basic is available now and costs $1,500 per developer.

Users question Win 98 upgrade path

▸ *Cite cost-benefit doubts, lack of timetable*

By April Jacobs

DON JOHNSON, a Microsoft corporate beta user, sees an upside in Windows 98.

He likes FAT 32, a 32-bit version file allocation table feature that gives users more power to manage a PC hard drive. He sees a modest boost in the way applications perform compared with Windows 95. And he is a fan of tight integration between the desktop operating system and the Internet Explorer 4.0 World Wide Web browser — subject of the well-known court dispute between Microsoft Corp. and the U.S. Justice Department.

But in spite of these pluses, Johnson said it is tough to make a business case for buying Windows 98, especially soon after he has finished migrating thousands of desktops to Windows 95.

And he isn't alone. Whether it is uncertainty about the Justice Department case or an uncharacteristic lack of marketing noise from Microsoft, users and observers said Windows 98, due to ship in the second quarter, generally fails to show that technology gain outweighs the cost and upgrade pain.

"There are some great features in Windows 98, but as to whether they justify the upgrade cost is a challenging question," said Johnson, director of microsystems and network operations at the Washington Stock Exchange. "Right now, we can only speculate on that."

Observers, including Johnson, said Microsoft has been quiet on Windows 98. Instead, the Redmond, Wash., software company has focused on its powerhouse Windows NT operating system. This, even though the latest version won't be ready for prime time until 2000 and can be as much as 40% more costly than Windows 95 to adopt, according to Gartner Group Inc. in Stamford, Conn.

Other users say they are concerned that Microsoft was supposed to release a successor to Windows 95 last year.

> **"I'm discouraged by the difficulty in determining the correct schedule for Windows 98."**
>
> **– Wayne Hastings, Detroit Edison**

The delay impacts some technology buying plans, said Wayne Hastings, assistant to the vice president of power generation at Detroit Edison Corp., a site that has 7,000 Windows end users.

Signs of early bugs in Windows 98, and the knowledge that Windows 95 required several service packs to fix early snafus, add to the uncertainty.

"I'm discouraged by the great difficulty I'm having in determining the correct schedule for Windows 98 and especially concerned by the many bugs in [Internet Explorer] 4.0, which is going to be closely linked," Hastings said. "We won't move to Windows 98 quickly, and the motivation overall to move to it is low-key at best."

Windows 98, page 48

YEAR 2000 FIXES

Utility tackles millennium PC BIOS bug

By Gordon Mah Ung

HOPING TO CATCH the eye of desktop users fearful of year 2000 problems, Network Associates Inc. will package a millennium bug fix and detection tool with its Nuts & Bolts Deluxe utility suite for PCs.

The Nuts & Bolts utility suite originated at Helix Software Inc., which Network Associates acquired last year. Santa Clara, Calif.-based Network Associates is the result of the McAfee Associates Inc. and Network General Corp. merger.

The deluxe suite, scheduled to be released this week, features a utility to test whether a PC system's BIOS and system clock can properly handle the rollover to the next millennium and dates beyond 2000. If the computer can't, Network Associates officials say, Nuts & Bolts will be able to patch the system.

BIOS, page 48

Network Associates' Nuts & Bolts Deluxe features:

- A year 2000 hardware problem detection and fix for PCs
- WebScan X, which detects malicious Java applets, ActiveX components and viruses
- Faster application launcher

Borland moves please loyal users

SURVIVAL PLAN

How Borland changed its strategy to steer itself out of financially rocky waters:

- Introduced C++Builder a year ago and released Version 3 two weeks ago
- Introduced JBuilder, its Java development tool, last summer
- Abandoned its Quattro shrink-wrapped spreadsheet
- Licensed Paradox, its shrink-wrapped end-user database, to Corel

▸ *Earnings in profit column, support boosted*

By Sharon Gaudin

APPLICATION DEVELOPERS who held on to their Borland International Inc. software tools when the vendor ran into rough seas are starting to feel rewarded for their loyalty.

Borland, best known for its Delphi application development tool, hit turbulent financial waters a few years ago. The company's stock plummeted from a high of $80 in January 1992 to a low of $5 a year and a half ago. Profits folded into losses, and one bad quarter led to another.

But what Borland didn't lose was a core of loyal users. Last year's Borland User Conference drew about 3,000 application developers eager to hear how Del Yocam, the company's new head, was going to lead the company out of trouble.

LOOKING UP

So far, Yocam has come through, rearranging the product line and improving the bottom line. The Scotts Valley, Calif.-based company introduced C++Builder last year and released Version 3 last month. Borland also unveiled JBuilder, its development tool for the Java programming language (see chart).

And the company posted a $2.8 million profit for the quarter ended in December. It was the third period in a row of at least breaking even, after posting a $42.5 million loss a year ago.

Borland, page 50

Utility tackles millennium PC BIOS

CONTINUED FROM PAGE 47

Experts say PCs manufactured in the past two years have exhibited some BIOS-related year 2000 problems. BIOS is a PC's Basic Input/Output System that provides low-level instructions for the keyboard, monitor and disk drives.

Several users said although they had no direct experience with Nuts & Bolts, a year 2000 utility for PCs should be something in everybody's tool box.

Craig Luis, computer service manager at Linfield College in McMinnville, Ore., said the college has many more Macintoshes than PCs, so any year 2000 PC bug isn't a serious concern.

And yet, he said, he has found that even newer PCs exhibit some BIOS problems. "I just got a logic board that was manufactured in November, and it's not year 2000 compliant," Luis said. "I think it's something that a lot of businesses have to deal with."

Luis said it would be a good idea to make the year 2000 utility available as a stand-alone product instead of making users purchase a suite. Nuts & Bolts retails for $49.

UNEXPECTED SUCCESS

Rob Enderle, an analyst at Giga Information Group in Santa Clara, Calif., said industry watchers hadn't expected Nuts & Bolts to be successful under Helix, especially with a crowded utilities market dominated by Symantec Corp.'s Norton Utilities and CyberMedia Inc.'s First Aid.

But in spite of those low projections, Nuts & Bolts has done reasonably well, he said.

Enderle said Network Associates is targeting Nuts & Bolts to consumers — fertile ground for where most of the older, noncompliant PCs will be.

Gordon Swarthout, asset manager at Washington State's Department of Labor and Industry in Tumwater, Wash., said the agency just went through upgrading equipment and checking PCs for compliance.

He said the agency had the option of using software fixes but opted for upgrading because of the glitches some memory-resident solutions can cause. □

RDBMS had a good run.

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DOTNE ENROLLMENT

Windows 98

CONTINUED FROM PAGE 47

For its part, Microsoft has issued upgrade recommendations that include advising Windows 3.1 users who want the easiest transition path to migrate to Windows 95. For users interested in high performance and the full 32-bit operating system environment, it recommends that users consider Windows NT Workstation 4.0.

Microsoft officials have said they won't include Windows 98 in their recommendations — or pricing for the product — until the product ships.

HESITATION

Dave Adams Saltz, president of Genesis-PC, a systems integrator in Shrewsbury, Mass., is a fan of the Windows 98 beta. But Saltz said he thinks Microsoft isn't heavily pushing the new operating system to corporate users because it doesn't want to undermine what it already has to offer in Windows 95.

"Windows 98 has a lot of good things under the hood, but Microsoft hasn't done what I'd call a terrific job of getting it to the corporate market," Saltz said.

John Pastore, chief technology officer at Chicago-based Capitol One Financial Corp., said he has seen the beta but isn't convinced it advances the features in Windows 95 to improve PC performance or ease desktop management enough to warrant a migration. "They are going to have to show me why the cost would be worth the move," he said. □

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Users upbeat on Borland

CONTINUED FROM PAGE 47

"The jury definitely was out a year or a year and a half ago," said John Melka, senior systems engineer at Nations Banc Services, Inc. in Chicago. "Their numbers were headed in the wrong direction . but Del has turned things around. They've regained their focus."

Melka echoed several other users who said that Borland had focused on its technology even during the bad times. But now the company also has a good focus on the business.

"It seems that now the people at the top are in control of the business," he said. During the bad times, Melka's bank turned some of his application development dollars from Borland's C++Builder to Microsoft Corp.'s Visual C++ tool, he said.

Users and analysts also pointed to the November acquisition of Visigenic Software Inc. as a sign of Borland's commitment to its large corporate customers and support for object-oriented distributed applications. Visigenic, based in San Mateo, Calif., is a vendor of object-oriented middleware, the glue that ties applications to databases spread across a large company.

"Definitely, the acquisition of Visigenic makes them appear more enterprise. People are going to take them more seriously in that arena," said Karen Boucher, vice president at The Standish Group International, Inc. in Dennis, Mass.

Boucher said many developers remained loyal to Borland because they like the company's tools. But to capture share in the corporate market, which is Borland's long-term plan, the company must present a healthy financial showing to win the confidence of large users, she said.

Mike Riley, director of Internet application development at Chicago-based printing company R. R. Donnelley & Sons Publishing Corp., said Borland's continued success may come down to how well it can marry Visigenic's middleware products to its tools.

"It's going to be interesting to see what they do with Visigenic. That's the key," Riley said. "We always have Microsoft's [Visual Basic] in the background in case Borland goes wrong. But we want to stick with Borland. I think we'll be able to." □

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Pricing starts at $10,000 per server, with a $2,000 charge per concurrent user license.

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INTEGRATED SYSTEMS, INC. has announced Sniff+ Version 2.4, an object-oriented code comprehension tool for managing, analyzing and reverse engineering large software projects.

According to the Sunnyvale, Calif., company, the tool includes new setup wizards, an improved graphical user interface and a graphical Java debugger. It supports Windows 95, Windows NT and Unix.

Pricing starts at $1,995 for node-locked licenses.

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Dan Bond, Data Warehouse Manager, Paradyne Corporation

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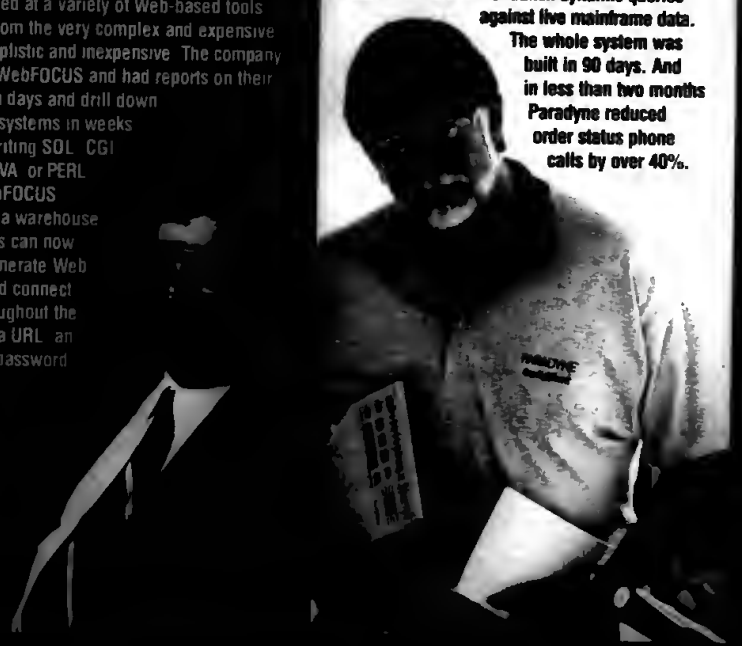

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Servers & PCs

Large Systems • Workstations • Portable Computing

Briefs

Sun adds server

Sun Microsystems, Inc. last week extended its workgroup server line with two entry-level systems: the Enterprise Ultra 5S, which will cost about $4,000, and the Ultra 10S, which has a starting price of about $6,000. The Peripheral Component Interconnect-based servers are being aimed at Web servers, messaging and groupware applications. The Mountain View, Calif., firm also announced its first RAID storage array for the workgroup market. It supports up to 12 Sun 18.2G-byte disk drives.

Removable storage

Iomega Corp. in Roy, Utah, has announced U.S. shipment of its 2G-byte Jaz removable storage drive for desktop and mobile computing. An external unit costs $649, and the 2G-byte media costs $149 per disk. Iomega also announced price reductions on its 1G-byte Jaz drive. The price of the 1G-byte external Jaz drive dropped from $399 to $299. Jaz 1G-byte media costs $89 per disk.

Expanding ports

Inside Out Networks in Austin, Texas, has announced the Edgeport/4, a device to expand a PC or server with four high-speed RS-232 serial ports by way of the Universal Serial Bus port. The product can connect PCs to modems, printers and point-of-sale devices. It costs $399.

Sun tweaks server line

Sun has released a 336-MHz UltraSPARC-II processor module with a 4M-byte external cache for its line of mid-range and high-end servers. The announcement marks the second time in less than a year that Sun has tweaked the performance of that line of servers. Sun said the processor module allows its Enterprise 3000-6000 servers to reach 43% greater computing performance than systems using its 250-MHz processors. Pricing wasn't provided.

IBM looks to the Web with OS/390

MAKING IT SAFE

Security enhancements in OS/390 2.0:

Level	Enhancement
Network	Firewall technologies
System	Integrated security server for controlling access to system resources and for workload isolation
Transaction	SET support, S/390 cryptographic coprocessor

By Jaikumar Vijayan

IBM LAST WEEK released the latest version of its OS/390 operating system aimed at the electronic-commerce and server consolidation markets.

OS/390 2.0 features enhanced TCP/IP-based connectivity as well as more robust security for running large electronic-commerce applications.

The mainframe operating system combines Domino Go Web Server for OS/390 with integrated Unix system services. IBM's ENetwork Communications server and an integrated Security Server.

MAINFRAME SYSTEMS

That combination makes OS/390 2.0 a highly effective offering in the World Wide Web server space, according to Raymond Neff, vice president of information services at Case Western Reserve University in Cleveland.

The university uses some of IBM's latest tools to enable its 10,000 students and 5,600 employees to access legacy data on its IBM mainframes.

Using standard PCs, Case Western students now can dial in to the mainframe via the Web and access financial aid information and course evaluations, for example.

"The [latest version] of OS/390 gives us more building blocks for providing these kinds of services" in the future, Neff said.

It also will allow users to host bigger and more secure elec-

IBM, page 54

Users see open storage gain in Amdahl system

By Nancy Dillon

USERS SAY Amdahl Corp.'s recent announcement of two RAID subsystems and data-sharing software is a welcome shot in the arm to the company's line of storage products.

"We had seen Amdahl go away to an extent," said Dan McDonald, director of computer services at Alaska Air Group, Inc. in Seattle. "But now they're filling in the gaps and are willing to go head-to-head with EMC and IBM, which is really positive."

McDonald has worked with Amdahl mainframes for 12 years. He bought his first Amdahl storage subsystem, the Logical Volume Series (LVS) 4500, last year to support Windows NT and Unix servers running Alaska Airlines' mileage plan, human resources and data warehousing applications.

Amdahl's LVS 4600 disk subsystem for open storage was announced Feb. 17. The company also unveiled the Spectris Platinum RAID storage system for S/390 mainframes and Global Information Sharing, software for replicating and

Amdahl, page 54

Amdahl's LVS 4600 storage subsystem

Maximum cabinet capacity: 910G bytes

Maximum cabinet cache: 512M bytes

Data paths: 10

Controllers: Two pairs for every 50 drives

Platforms supported: Solaris, Windows NT, HP/UX, AIX, IRIX, Digital Unix

Handhelds get needed Notes capabilities

▸ *Psion devices to allow remote client access*

By Kim Girard

MOBE USERS ARE getting their hands on expanded Lotus Notes capabilities funneled in to their pint-size devices.

Psion Computers PLC in Concord, Mass., soon will offer remote access to Notes via its devices.

"Up until now, you haven't been able to do E-mail from a handheld if you were using Notes," said Rob Enderle, an analyst at Giga Information Group in Santa Clara, Calif.

With the exception of Apple Computer, Inc.'s Newton, which has a Notes 5.0 client, Lotus is somewhat late to the handheld party, observers said. 3Com Corp. in Santa Clara, maker of the PalmPilot, recently began offering electronic-mail connectivity for Lotus Notes. Shared database applications are also available. Microsoft Corp. offers an Exchange E-mail client and a scaled-down Outlook E-mail client for many handhelds running Windows CE 2.0.

Todd Barton, an information technology manager at an Atlaota-based textile company, said he is considering developing a shared Lotus Notes database application for his company's sales force so employees can use their PalmPilots instead of notebooks to track inventory in the field.

Barton said he also plans to use his PalmPilot to read and send E-mail from home.

"Bringing my laptop home all the time is a pain in the butt," he said.

With about half of all corporate E-mail users using Notes, Notes client access for handheld

Handhelds, page 54

PSION'S INSYNC FOR NOTES

Module	Release date
Notes 4.5/4.6 calendar and address book synchronization with Psion	April
Notes 4.5/4.6 database synchronization with Psion data	Midyear
Series 5 client for Notes	Year's end

Amdahl boosts open storage

CONTINUED FROM PAGE 53

sharing data across databases on MVS, Windows NT and Unix platforms.

The LVS 4600 differs from the 4500 in that it has 910G bytes of storage and the 4500 has a maximum capacity of 819G bytes of storage. The 4600 also can connect more controllers for faster access. Pricing starts at about $45,000 for a 90G-byte system.

Ed Eiskina, vice president of applications at financial record-keeping service firm OST Systems, Inc. in Kansas City, Mo., said he will likely replace his three LVS 4500s with the 4600 model.

"I'm interested in the capacity increases because the data marts that we provide to our customers for marketing purposes just keep growing," he said. "It seems that the more data you give them, the more they want."

The Spectris Platinum RAID system for S/390 has a maximum capacity of 715G bytes and will start at about $126,000 for a 180G-byte system. Amdahl officials said they expect to make it compatible with open systems by the fourth quarter.

"It's important that Amdahl is stepping up the pace of storage product introduction," said John McArthur, an analyst at International Data Corp. in Framingham, Mass. "It shows a commitment to users. But Amdahl still needs to get back to a size that makes money in the storage market."

McArthur's projections for S/390 disk storage in 1998 give Amdahl just 3.5% of the market — far behind market leaders EMC Corp. with 51%, IBM with 27.4% and Hitachi Data Systems Corp. with 17.9%.

> 'It's important that Amdahl is stepping up the pace of storage product introduction. It shows a commitment to users.'
> – John McArthur, International Data

Sunnyvale, Calif.-based Amdahl also faces formidable competition on the software side. Its Global Information Sharing software will let users share data among IBM, Oracle Corp., Informix Corp., Microsoft Corp. and Sybase, Inc. databases. But applications such as DataReach from EMC, DataShare from Sun Microsystems, Inc. and Multiplatform Data Exchange from Hitachi can do the same thing.

Hopkinton, Mass.-based EMC also has remote mirroring software, called Symmetrix Remote Data Facility, that provides online, real-time data mirroring to remote storage that can take over immediately in the event of a failure.

MTI Technology Corp. in Anaheim, Calif., announced a similar application last week, Business Critical Remote Mirroring. The host-based shadowing software runs on MTI's Gladiator line of disk arrays. It costs $40,000 and includes fiber-optic links. □

IBM looks to the Web

CONTINUED FROM PAGE 53

tronic-business applications on existing S/390 platforms, IBM officials said.

For instance, IBM's ENetwork communications server provides connectivity to a broad set of client applications and vendor platforms over LANs and WANs and supports several protocols, including TCP/IP.

On the security side, OS/390 2.0 addresses issues at the network, system and transaction level. For instance, it comes with integrated firewall technologies that allow administrators to control network access to enterprise systems.

Security at the system level is addressed through access controls to system resources and better isolation of the workloads that run on the platform.

At the transaction level, the operating system's support for Secure Electronic Transactions (SET) combined with the cryptographic coprocessor that IBM previously integrated into the hardware means more privacy and integrity for electronic transactions.

BIG FOCUS

"E-commerce is obviously a major focus for IBM" in OS/390 2.0, said Vick Mudrick, vice president of technical services at Office Depot, Inc. in Delray Beach, Fla. "But we don't have any immediate plans to take advantage of it."

But enhanced TCP/IP support means Office Depot will be able to better hook its cluster of mainframes in to the company's corporate network to access legacy data, for example, Mudrick said.

IBM's latest version of the OS/390 also builds on the company's effort to position the S/390 as a platform on which users can consolidate multiple Unix servers.

Version 2.0 provides tools for application development to deploy or transfer Unix applications to S/390 systems. A feature allows the S/390 to act as a print server to handle host and LAN printing. □

Vendors team to offer 64-bit SCO UnixWare

▸ Version will run on Merced processor

By Nancy Weil

FOUR SEAVEA VENDORS last week said they will work with SCO, Inc. to develop a 64-bit version of SCO UnixWare to run on Intel Corp. processors.

Officials at Compaq Computer Corp. in Houston, Data General Corp. in Westboro, Mass., the British systems maker ICL PLC and Unisys Corp. in Blue Bell, Pa., said they will invest unspecified millions of dollars with SCO.

The money will go toward developing a version of UnixWare for the Merced chip being developed by Intel and Hewlett-Packard Co.

The pact is an effort to bring UnixWare into the higher reaches of the data center, officials at the companies said. The server vendors said they would market UnixWare to large user shops.

SCO, which is based in Santa Cruz, Calif., also is working with Intel to develop a 64-bit version of the UnixWare system, which will ship with Merced, company officials said. □

Weil writes for the IDG News Service in Boston.

NEW PRODUCTS

VISIONTEK has announced ExtremeDrive Plus, an enhanced version of its notebook hard drive upgrade kit.

The Gurnee, Ill., firm said the hard drive replacement kit lets users increase their hard drive capacity up to 3G bytes. Users can transfer the operating system, applications, files and drivers to the new, larger hard drive in about an hour. Models for most popular notebooks are available.

A 1.4G-byte kit costs $599, a 2.1G-byte kit costs $699, and the 3G-byte version costs $899.

VisionTek
(847) 360-7500
www.visiontek.com

JVC PROFESSIONAL COMPUTER PRODUCTS has announced the MC-Printer Model 200 CD-ROM Library System.

According to the Cypress, Calif., company, the 200-disc capacity library combines library data storage, disc duplication and internal disc label printing in one unit. It comes with six internal drive bays. Windows NT-based disc duplicator software and an optional color label printer. The six drive bays can be configured with any combination of CD-ROM, CD-Recordable or digital video disc drives.

The product costs $16,395.

JVC
(714) 816-6500
www.jvc.net

MICRO DESIGN INTERNATIONAL has announced the PolarByte line of disk array subsystems for applications that require high availability.

The Winter Park, Fla., firm said the systems use a cableless UltraSCSI bus to support up to 16 drives on one SCSI IO and provide access speeds up to 40M byte/sec. The systems are available in capacities of 24G, 54G and 81G bytes. They support RAID striping and mirroring in levels 0, 1, and 0+1, as well as RAID levels 3 and 5.

The systems cost $25,499 to $33,999.

Micro Design
(407) 677-83333
www.mdi.com

Handhelds get Notes capabilities

CONTINUED FROM PAGE 53

devices will be welcomed by new and existing corporate users, Enderle said.

Psion plans next month to release InSync for Notes, a plug-in synchronizer for PsiWin 2.1, the company's PC docking software. The tool enables users to synchronize a Notes calendar and address book to Psion's personal information manager applications.

By midyear, InSync for Notes 4.5 and 4.6 will enable two-way Notes database synchronization on Psion's newest Series 5 handhelds. Psion's Messaging Suite, which includes an E-mail client, World Wide Web browser and send/receive fax software, shipped with Series 5 handhelds.

It also will be used to access Notes mail. The E-mail client supports both TCP/IP and Post Office Protocol 3.

PERFECT PSION

Enderle said the PalmPilot palmtop, which has no keyboard and a small screen, is cumbersome for E-mail, but the larger Psion is perfect for the application.

"I've only used [the Pilot] a couple of times for E-mail just to see if I could do it," said Jim DeSelms, a software engineer at Marcam Solutions, Inc., a software company in Newton, Mass.

"I'm not sure it's anything I'd want to use regularly. It's kind of a pain," he said. □

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THE SCIENCE AND ART OF PROGRAMMING

Know thy recruiter
Developing a relationship with a recruiter can help you get the best people.
Page 58

Managing

TCO TALES

By Gary H. Anthes

Trying to figure out how to rein in desktop costs? Read how four organizations are doing it by enforcing standards, removing disk drives and using network computers

James C. Miller has led the call for cutting total cost of ownership at Hallmark Cards. The result: TCO per user has dropped 20% since mid-1995. And Miller says he isn't done

Much has been made lately of total cost of ownership (TCO), and with good reason. Studies have shown that the cost of acquiring and supporting a desktop system can run into five figures annually.

But many information systems shops don't think in TCO terms, and several of them interviewed by *Computerworld* say they have no idea what their TCO per user is. But that doesn't mean the cost of desktop systems isn't a big issue in those companies or that they haven't taken aggressive, and successful, steps to control costs.

The organizations profiled here have sought to reduce costs in quite different ways, from automated software distribution to postponement of upgrades to outsourcing. But a common thread carries through each of their cost-control strategies: All have worked hard to standardize desktop systems and rein in end users' creative excesses.

HALLMARK CARDS, INC., KANSAS CITY, MO.

When James C. Miller joined Hallmark in 1993, IS was fragmented and chaotic, and TCO was out of control. A central IS group tended the mainframe data center but would have nothing to do with the company's thousands of PCs and Macintoshes. Twelve more IS shops lived independently in various business units. There was no standardization of hardware, systems software or applications.

"I recommended that we circle the wagons, consolidate all those IT functions and start to homogenize it," says Miller, vice president of information technology. "And we took a long-term view of TCO."

Through those and other measures, Hallmark has slashed TCO per user by 20% over the past 30 months for its 1,500 Macintoshes, 5,000 desktop PCs and 1,500 laptops, and Miller says he hopes to cut another 4% to 5% in each of the next two to three years.

Miller separates TCO into five broad pieces. He wouldn't release dollar figures, but here's what he was able to accomplish, measured in percentages:

▶ Requirements analysis and order determination (cost per user cut by 35%): "When we started out, you could order anything you wanted and configure it any way you wanted," Miller says. "We have completely standardized the process and created a very short menu of standard options."

▶ Procurement and installation (cost per user cut by 20%): Hallmark put in a fast-track procurement process for items on the "short menu of standard options," while at the same time creating "a very slow, rigorous path" for buying nonstandard items, Miller says. Hallmark also outsourced a lot of the PC procurement process and replaced much manual processing with electronic data interchange.

▶ Repair and help desk (cost per user cut 20%): Hallmark outsourced those functions as well as procurement 18 months ago.

▶ Move/add/change (cost per user cut by 5%; target is 33%): Hallmark is installing Microsoft Corp.'s Systems Management Server for remote desktop management. That will eliminate the need to visit every PC for software changes, Miller says. The company also discovered that it's cheaper in the long run to buy richly configured systems at the outset rather than buy minimally configured boxes that have to be upgraded two or three times.

▶ Refresh/replace (cost savings uncertain): Hallmark used to buy its PCs but now leases them for three years. Labor savings come from elimination of cascading (passing down PCs from one user to another) and property disposal.

PEOPLE'S BANK, BRIDGEPORT, CONN.

Managers at the bank don't use the term "total cost of ownership," and they can't cite a TCO figure.

But that doesn't mean costs aren't important, says Robert Caplan, vice president of technology and communications at People's, which has $7 billion in assets and 140 branches. It has done much to squeeze the costs of its desktop systems.

People's has standardized on Dell Computer Corp. PCs and servers for its 3,500 users, bringing both simplicity and volume discounts. And the bank saves by not rushing to buy. For example, the following practices postpone costs, result in lower purchase prices and avoid expensive, bleeding-edge technology:

▶ Instead of the common three-year depreciation of PCs, People's keeps the machines and writes them off over five years. As new computers are purchased, older ones are "pushed down the food chain," Caplan says.

▶ The bank buys one or two steps back from state-of-the-art, "at the most effective part of the price curve," Caplan says. It now is buying 200-MHz Pentium PCs, which are adequate for its needs.

▶ It doesn't rush software upgrades. The bank is just beginning its migration from Windows 3.1 to Windows 95.

▶ It buys late in a vendor's quarterly and annual accounting cycles. "You can get big discounts when they are trying to make their numbers," Caplan says.

▶ It "buys for the future but stocks for the present." For example, the bank might buy a computer preloaded with Windows 95 and Office 97, even if it will run Windows 3.1 and Office 4.3 on it. It can load the older software it already has licensed at no cost, then later upgrade to Windows 95 and Office 97 at no additional charge. In addition, People's takes advantage of competitive upgrade discounts and has saved $94,000 that way in the past 12 months.

People's has held down support costs by strictly limiting what users can install on their PCs. To make sure rules are followed, the bank periodically "refreshes the entire desktop image" from the server, Caplan says. Any nonstandard software is wiped clean.

That standardization helps the bank resolve 92% of its help desk queries on the first call, compared with a more typical 80%, according to Caplan.

People's got big savings by outsourcing all its maintenance to Unisys Corp. Unisys maintains PCs, servers and printers for a fixed annual fee that's "significantly less" than what it would cost to do the work in-house, Caplan says.

People's Bank has held down support costs by strictly limiting what users can install on their PCs.

BMW FINANCIAL SERVICES NA, INC., DUBLIN, OHIO

Controlling TCO at BMW Financial Services is largely a matter of standardization on the desktop, with those standards strictly enforced by top management.

All users have identically configured local hard drives, and user data is stored on network servers. Software distribution is automated, and a remote software agent allows troubleshooting from the help desk. When a PC fails, it can be swapped out for another in minutes, says Mark A. Virag, manager of the information technology department.

All users at BMW Financial Services have identically configured local hard drives, and user data is stored on network servers.

To help maintain that standardization — and to avoid viruses — the company in 1995 removed all diskette drives from its desktop systems. To make that policy acceptable to users, Virag set up a virus scanning station in the computer room. After scanning, a diskette's contents can be loaded to a user's network drives, but never to his PC.

The removal of the floppy drives was "hugely unpopular" at first, but now users appreciate the rapid problem resolution that the strict standards make possible, and most users fully support them, Virag says.

The company has just four technical people to support 350 users. An outsourcing vendor declined to bid on BMW Financial's technical support when it concluded it couldn't do it any cheaper. "If my boss came to me and said, 'You must turn on the a: drives,' I'd say, 'All right. You must give me 10 more technicians,' " Virag says.

Annual TCO per user is $4,000, not including the LAN infrastructure and some technical training performed by the human resources department, Virag says.

CALIFORNIA HOUSING FINANCE AGENCY, SACRAMENTO

When this state agency had all its applications on a Prime Computer, Inc. minicomputer and users had dumb terminals, the IS department employed one systems administrator. Now, with a LAN, six IBM RS/6000 servers running Unix, two Compaq Computer Corp. Pentium Pro servers running Windows NT and 180 desktop systems, the agency still has just one administrator.

The magic? The desktop machines are network computers with no local hard or floppy drives and almost no software. When the agency replaced its minicomputer with client/server systems in 1994, it decided to go with terminals from Network Computing Devices, Inc. in Mountain View, Calif., instead of PCs because it felt Windows was too unstable. It will stay with the machines for the foreseeable future, using them as Java-compliant network computers accessing Windows NT servers, says Dominick Maio, chief information officer. Most users employ network computers exclusively, for routine office automation tasks as well as for complex financial analysis associated with loan processing and structuring tax-exempt bond deals.

"[Network computers] are incredibly easy to support and maintain," Maio says. In fact, the agency has no help desk.

The agency paid $2,200 for each terminal and 17-inch monitor in 1994. In addition to saving a bundle on support, it can leave the desktops virtually unchanged for up to five years, Maio says. With PCs, the agency by now would have already gone through one hardware upgrade, plus a migration from Windows 3.1 to Windows 95, he says.

In a December study, Gartner Group, Inc. in Stamford, Conn., concluded that network computers can cut TCO 21% to 35% compared with Windows 95 computers [@Computerworld, Dec. 16]. And in a recent survey of 52 large companies, Meta Group, Inc., also in Stamford, found that the total capital and operational costs of a network computer environment can be 23% less expensive than an unmanaged PC environment and 10% less than a managed environment.

"Don is viewed as our hero around here," says Jackie Riley, Maio's boss and the director of administration. "The system has saved a lot of money over a PC/LAN environment."

The agency takes a relatively permissive stance on its desktop standards. About 20 power users, who balked at the network computer's limitations, were given external diskette drives so they could move files into and out of the server for use at home or on the road.

You have to be prepared to make those kinds of exceptions to the rules, even when that affects TCO, Maio says. "If the in-house provider of IS services doesn't keep everybody satisfied, they can go elsewhere, and then your job goes away," he says. □

Anthes is Computerworld's senior editor, special reports.

KNOW THY HEADHUNTER

When it comes to recruiting, forget flirting. Long-term relationships accomplish more

By Kathleen Melymuka

Sandra Johnson of MCI Systems House has worked with recruiter Lina Fafard (inset) for 10 years. Fafard helps Johnson not only fill openings on her staff, but also find new work for MCI staffers who Johnson feels would be better off elsewhere.

WHEN BELK STORE Services Co. had an opening for a director-level position recently, it put the word out to technical recruiting firms and got 57 resumes.

"The vast majority didn't even come close to satisfying our requirements," recalls Conda Lashley, executive vice president of development at the Charlotte, N.C., retailer. "Then we switched over to a firm where I had used a guy previously and knew him pretty well. They quickly got us three viable candidates."

As information systems managers struggle with the skills gap in a tightening labor market, many are finding that establishing a long-term relationship with a technical recruiter can help. It gives you a partner who understands your technology, your environment, your needs and your style and who's willing to do the legwork you don't have time for. It means a few good candidates rather than piles of resumes. It means a shorter recruiting cycle and no raiding.

"It's almost invaluable," says Sandra Johnson, director of product specialists at MCI Systems House, a Napa, Calif., outsourcer. She has worked for 10 years with Lina Fafard at The Partners LLC, a Torrance, Calif., IS search firm. "Lina goes through all the screening, and I end up almost flipping a coin," she says. (Fafard is a columnist for *Computerworld*'s IT Careers section.)

Knowing a recruiter is useful in any field, particularly in IS, with its complex array of skills and fierce competition for talent. "There are so many skills sets and subsets of skills in IT," says Carl Underhill, a vice president at Massachusetts Financial Services in Boston. "When I say 'developer' or 'programmer/analyst,' that means something very different to different people, but if I say it to someone I've known for 10 years, he knows exactly what I mean."

And, Underwood says, "in this IT marketplace, people I interview may be looking at four or five other opportunities, and I need [the recruiter] to be an advocate for me and my company."

Contrast that with a one-time deal. "There are those who will find someone for you and six months later pull that same person away," Johnson says. "That's very common with folks not in it for the long term."

Someone who knows you well can judge whether a personality will fit in, says Julian Price, vice president and chief technology officer at Dickinson Direct, an advertising firm in Braintree, Mass. Price has worked for 10 years with Eileen Foley at Winter, Wyman & Co., a Waltham, Mass., IS recruiting firm. "I don't like people who look shabby," Price says. "She won't send me someone like that, and another person will."

In fact, recruiters who depend on volume placements are infamous for ignoring explicit requirements. "It's a little like house hunting," says Don Harris, manager of IS staff development at Belk. "You say you're looking for something in the $150,000 price range, and they'll show you something for $175,000. But if we work with someone over and over, they come to know what we mean."

Long-term partners not only find the right candidate faster, but also help you hire him faster. In the highly competitive IS skills market, that can be crucial. Lashley, for example, has terms and procedures in place with his recruiters, and they use electronic mail for fast turnaround. "Before," he says, "by the time we'd get a resume and send it around and make an offer, they'd have taken a job somewhere else."

A recruiter you trust can do more than fill vacancies. "When someone in the organization has outgrown a position but won't move on, or if a person is just not working out here but I know they could be successful elsewhere, Lina can recruit them out without their ever knowing [I was involved]," Johnson says.

But only if Johnson asks. One of the fringe benefits of long-term relationships is that recruiters will agree not to raid you while they're working with you.

Eventually, such relationships can turn into true partnerships. "You grow to trust that he's got your best interests at heart," Underhill says.

With a good recruiter, that trust is well-placed. "A recruiter is really a strategic partner in building your organization and advancing your own career. That's why the 'who' is so important," Fafard says.

To find a good partner, ask key staff members, peers and colleagues for recommendations, and interview prospects in person. "If they're jumping right in, saying, 'We've got all kinds of candidates who can do that job,' that's a bad sign," Price says. "If they ask to talk about my company, my environment and get a perspective on my style, that's good."

Find out if they're in the business for the long term, Fafard says. "If they're just doing it in between school, they're probably not the person you want to disclose your entire organization to."

Make sure your work styles mesh. If you're driven and they're laid back, you'll drive each other crazy.

Finally, realize that long term doesn't mean monogamous. "I use different recruiters for different kinds of skills," Johnson says. "One size doesn't fit all." □

Melymuka is Computerworld's senior editor, management.

It takes COMMITMENT

Building a relationship with a recruiter takes some effort. Here are some things an IS manager can do to maintain a relationship in good working order.

- **Get human resources to set up financial terms. Then take over and deal directly.**
- **Invite the recruiter in and show him what you do, who your customers are and where you're going. Give him an honest feeling of the place so he can judge who will fit in.**
- **Don't jump the gun by giving your recruiter advance word on a probable opening. Wait until you're sure it's real.**
- **When a candidate is presented, make a decision and communicate it quickly. When a job is filled, tell the recruiter immediately.**
- **Be honest with feedback. Give it to the recruiter straight. He can translate it to the candidate in a politically correct way.**

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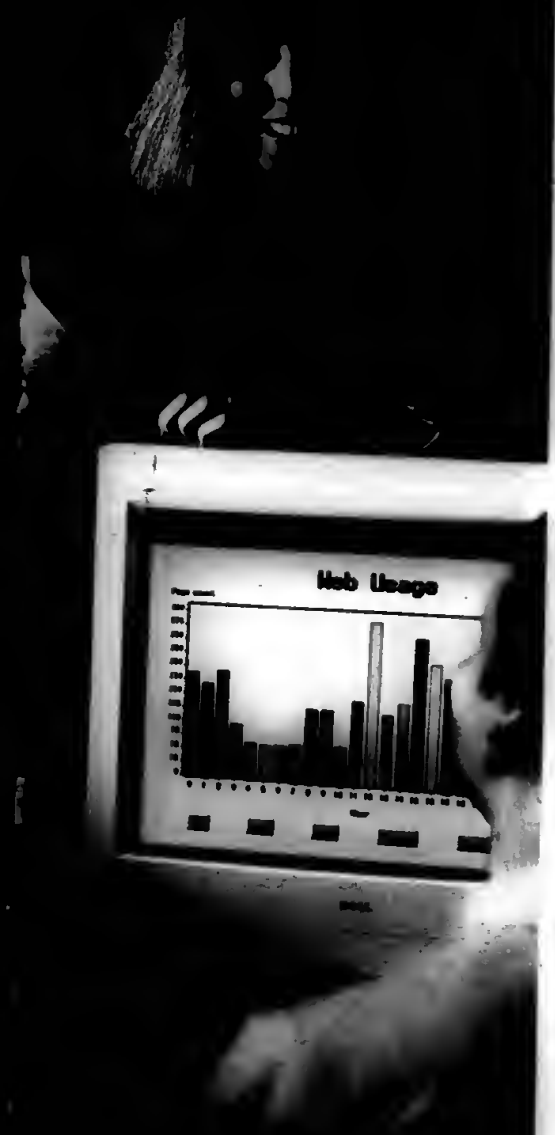

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HOW TO CHOOSE THE Right Data Warehousing Tools

Sorting through the many data warehouse products now available is no simple task. Adding to the confusion is the proliferation of terms vendors use to position their products: enterprise data warehouse, global data warehouse, operational data store, departmental data warehouse, data mart and application warehouse.

By Colin White

When selecting tools, organizations should ignore technology terms and focus instead on the types of information they require and on the types of processing they will need to perform on that information. This information varies in *scope*, *state*, *granularity* and *structure*.

Information stored in a data warehouse can be applicable to multiple business units or to a single business unit or department. Sometimes it is further refined to meet the requirements of a single user, a small group of users in a department, or a specific application.

In any case, the information managed by a warehouse is maintained in an information store. The *scope* of this information store is described as global, departmental or application. Within each of these, the information varies in state, granularity and structure.

Data maintained by operational line-of-business (LOB) applications is always current, since it reflects the up-to-the-second status of business operations. However, information managed by a data warehouse can be current or historic.

If information is current, it has the same *state* as the data in the operational databases. (Naturally, this information in the warehouse has been cleaned and reorganized into business subject areas.) Current information in a warehouse is used in making tactical day-to-day business decisions. A customer information system, which documents the current status of all accounts belonging to a customer, is an example of a warehouse that contains only current data.

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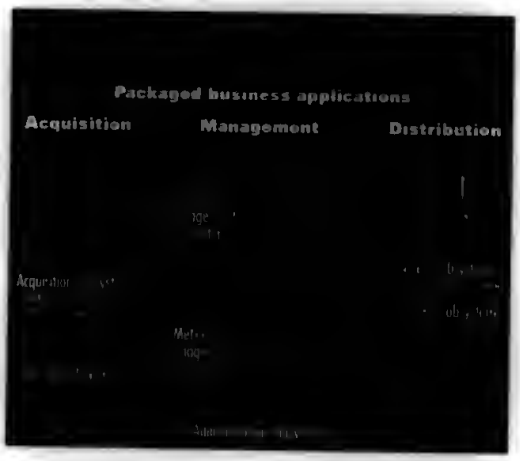
Industry Moves Toward Specific Business Solutions

The data warehouse industry is moving toward providing business solutions for specific industries or business problems instead of just pure technology. To reduce the effort involved in implementing data warehouses, vendors need to provide packaged business applications. Some vendors now use the term 'business intelligence system' to demonstrate their focus on business solutions for delivering all types of business information to users. This focus will become a key distinguishing factor between vendors.

Historic information, which shows how data in operational LOB systems has changed over time, is used for both tactical and strategic business decision-making, and comes in many flavors. A *snapshot* shows the state of information at specific moments in time. An example is total sales by month fot all products in a given store for the last five years.

To analyze this information, canned queries could be run once a month and executives alerted if sales figures for the current month fall below those of previous months. An executive could then use an online analytical processing (OLAP) tool to drill down into more detailed information to analyze why sales have dropped.

In an *information state change log*, a record is kept of every change made to a piece of operational LOB data over time. For example, keeping track of the different sales channels used to sell a product over time would enable an analyst to relate sales history to the method used to sell the product. An *information event log* (an example of which would be recording all sales a store made to customers over the past three months) would allow a data mining tool to analyze customer buying trends and patterns.



Granularity of information in a warehouse can be either detailed or summarized. Detailed information is usually stored at an individual record level; summarized information is often recorded at multiple levels of summarization, e.g., daily, monthly and annually.

Equally important is the *structure* of information managed by a warehouse. Today, most warehouse information is acquired from operational databases or from external information providers; it is highly structured and usually consists of either numbers or character strings. In the future, however, warehouses will manage all forms of business information, including documents, reports, charts and Web pages.

END-TO-END

A data warehousing system is an end-to-end solution for supplying information to business users. Developing this solution revolves around three processes: acquire the information of interest, manage it, and distribute it to the users.

The *acquisition process* requires tools that capture data from a source system, transform and clean it, then integrate and load the results into the ware-

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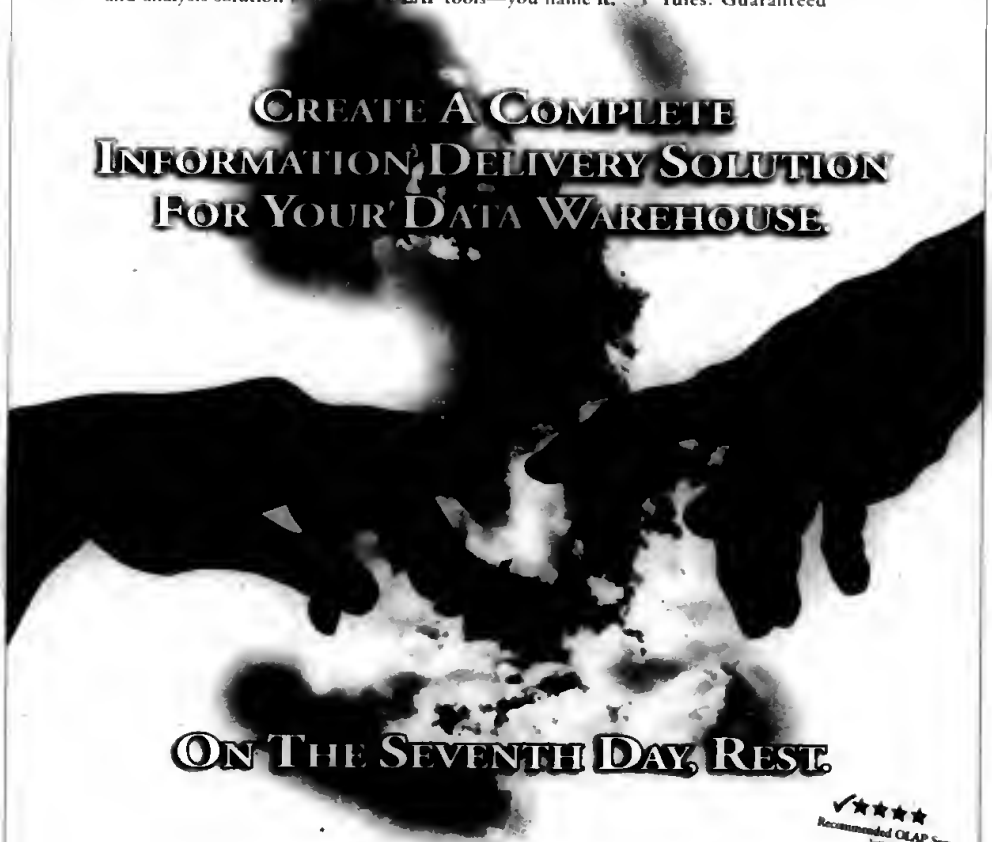

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Information Store Builders Begin to Dominate

There are many different types of acquisition tools including code generators and data replication products. The biggest growth has been in the area of rule-driven information store builders. Products here include D2K Tapestry, IBM Visual Warehouse, Informatica Powermart, Information Builders SmartMart, Oracle Data Mart Suites, Platinum Technology InfoPump, Sagent Data Mart Solution and VMark Data Stage.

house information store. If the capture or load processing occurs on a different system from that of the transformation processing, a transportation capability is required to copy data to or from the transformation component. Some acquisition products provide tools for designing the information store databases. If not, developers will need separate tools to do this.

As data systems grow more complex, more data sources and interfaces are involved, and more data transformation and integration has to be done. Therefore, acquisition tools must be able to capture, transform, clean and integrate information while handling the volume and complexity of the disparate data sources involved. The interface management and transformation power provided by the acquisition process directly affects the quality of information in a warehouse and the ability of the product to scale to support the information needs of business users.

These scalability considerations include the:

- data sources supported by the capture component;
- data transformation facilities provided;
- ability to load information efficiently into one or more information stores;
- scheduling and workflow capabilities for managing the synchronization of capture processing;
- facilities for managing errors that occur during acquisition;
- architecture of the acquisition subsystem; and
- use of staging tables to manage the acquisition process if it involves handling a large number of data sources.

MANAGEMENT PROCESS

The process of *warehouse management* involves an information management subsystem, a metadata management subsystem and an administration subsystem. The information management subsystem maintains and accesses information in the warehouse information store. Relational DBMSs (RDBMSs) are normally used to manage large-scale global information stores, where parallel query processing and support for very large databases are often required. Smaller information stores, such as departmental and application stores, use either an RDBMS or a multidimensional DBMS (MDBMS).

The database engine of an MDBMS employs a specialized file system to store, compress and retrieve data arrays at various levels of summarization. Because MDBMS engines provide fast access to highly summarized data, they are ideally suited to warehouse OLAP.

Many vendors have begun to separate the abstraction layer of an MDBMS that does the analytical processing (i.e., the multidimensional analysis) from the underlying database engine, and allow this layer to be run in a separate middle-tier server that can access data managed not only by the MDBMS engine, but also by a relational one. This hybrid architecture gives organizations the flexibility to

use either an RDBMS or MDBMS information store. Examples of products here include the Oracle Express Server and the DB2 OLAP Server (developed jointly by Arbor Software and IBM).

Each warehouse subsystem contains metadata that describes the data and information handled by the subsystem. The metadata management subsystem integrates this metadata into a single repository or *information directory*. This directory acts as a roadmap, helping users navigate the information stored in a warehouse and understand its meaning from a business perspective.

The metadata management subsystem also provides tools to integrate, maintain and view metadata. In the same way that an information store integrates data from multiple data sources, an information directory integrates metadata from multiple metadata sources.

Most organizations that implement a data warehouse focus on the tools for building an information store, and distributing warehouse information. However, once the warehouse is in production and data volumes and usage increase, administration becomes a key issue.

Companies require a subsystem that incorporates tools for managing warehouse administration tasks such as service-level management, data acquisition operations, data storage management, data and user security, and data access and delivery operations.

DISTRIBUTION

In the *distribution process*, either access tools or delivery tools can be used to distribute warehouse information to users. Access tools, which employ graphical- and Web-based interactive interfaces to pull information from a warehouse information store to client computers, fall into three categories: query and reporting, OLAP and data mining.

Query and reporting tools are used for querying, reporting and basic analysis of the information in a warehouse. OLAP products perform operations involving multidimensional analysis, slicing and dicing of information, pivoting of results, and drilling down from highly summarized to detailed information. Data mining tools are used to discover hitherto unknown patterns in warehouse information.

As the amount of information in a warehouse increases and the number of users grows, organizations will require more than the access tools in use today; they will also need information delivery tools. Such tools provide a more managed push approach where users subscribe to warehouse information that has been documented (i.e., published) in the information directory, and the warehouse delivers the information at user-defined intervals. Delivery tools will need to support a directory-based publish/subscribe model that enables the delivery of information to a variety of different target systems. ✦

COMPUTERWORLD
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This White Paper was written by Colin White, president of DataBase Associates International Inc., a consulting and training company that specializes in database systems, data warehousing, distributed computing and the Web-enablement of enterprise systems. The company can be contacted at P.O. Box 310, Morgan Hill, CA 95038, (408) 779-0436. Its web site is www.dbaint.com.

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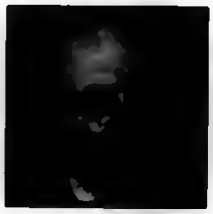
CW Custom Publications has published other White Papers on the subject of data warehousing as well as related subjects such as data marts. For more information on these White Papers or to purchase reprints, please contact Heidi Broadley at (508) 820-8536 or at heidi_broadley@cw.com.

The data warehouse partners you choose could have a profound effect on your career.

It's human nature to blame mishaps on random acts. Calling a half-trillion-dollar goof the year 2000 "bug" fits into that pattern. And unless we stop calling it a bug, we won't learn the most important lesson from this disaster.

PAUL A. STRASSMANN

YEAR 2000 A 'BUG'? SWAT THAT WORD FROM YOUR DICTIONARY



Associating our year 2000 misfortunes with software bugs is widespread. My browser turned up 2,914 articles when searching for the "year 2000 bug" text string and 692 articles when inquiring about the "millennium bug."

How did the term "bug" catch on, when there are more accurate terms such as "screw-up," "negligence," "carelessness" or "thoughtlessness"? The answer is plain: A bug is an unpremeditated and unplanned occurrence, while the more appropriate words may call for a judgment about personal accountability.

The term "bug" goes back to the late Rear Adm. Grace Hopper, who often told the story about a moth trapped inside the mechanical switch of one of the earliest computers. She told the senior mathematicians a bug had caused the computer to malfunction.

Though moths could never block programming logic, the term "software bug" caught on. Programmers attributed all sorts of omissions and errors to bugs: it was a convenient term — short and blame-free.

The word evolved, allowing the substitution of terms such as "debugging" for program testing. Today, we see software faults labeled as accountability-avoiding features — as in President Clinton's Executive Order of Feb. 4, creating the Year 2000 Conversion Council for safeguarding U.S. government computers. It refers to the year 2000 problem as a "design feature."

But nothing in the history of computer jargon compares with rationalizing managerial negligence as a random event. Calling the year 2000 fiasco a bug suggests something as blameless as a trapped insect. It isn't. It wasn't an error of omission but an error committed because managers weren't diligent about the likely consequences of the systems they built.

SEEKING ABSOLUTION THROUGH FICTION

Those who talk about the year 2000 situation as a manifestation of IT's supposedly intrinsic "bugginess" are following a well-established pattern of behavior. Psychiatrists have written books about the universal tendency to engage in blame-displacement when people are confronted with a mess.

The U.S. Air Force, for instance, has a long tradition of attributing to gremlins the responsibility for maintenance mishaps. Greeks and Roman generals would lose battles because of demons. Jewish lore is full of stories about dybbuks that make people do all sorts of things they later regret. The Irish deploy leprechauns, and the Scandinavians have their trolls to account for whatever mischief may happen.

We now face the most costly technological mistake since Roman engineers installed lead pipes that gradually poisoned much of the population of ancient Rome. The difference is that the Roman aqueduct builders didn't know, at least initially, the consequences of what they were doing. IS managers can't claim ignorance or blame fictitious creatures as a defense.

THE EXPLANATION

Unfortunately, no one can learn anything if he's unwilling to comprehend. The time has come to understand why analytically minded experts would neglect fixing something that in due course would cost untold billions. We must be candid about it rather than hide behind a convenient bug label.

How the year 2000 neglect crept in and how it compounded isn't a mystery: The demand for IT support always exceeds available resources. Projects with short-term payoffs — such as fast maintenance fixes and buying attractive new technologies — look more appealing than long-term investments. When management confronts a choice between quick fix or quick payback — as many consultants promise — rather than the farsighted view favored by IS management and some vendors, the long-term approach doesn't get much of a hearing. Management trusts the consultants more than its own staff. That's how everyone ends up spending trillions of dollars in a continuous frenzy of build-and-scrap cycles.

The year 2000 problem covers up hundreds of other cases of accumulated neglect that show up as decreased employee productivity, increased overhead and unnecessary complexity. If we are to learn from the year 2000 experience, we must see it as a lesson in managing IT with an eye on its long-term consequences. Systems have a surprisingly long life, databases last for decades, and software logic is potentially immortal.

Software is an investment, not an expense. Treat it that way. Nobody will learn much from rationalizing it as a bug-prone accident. □

Strassmann (paul@strassmann.com) is getting ready to fumigate bugs. He is founder, chairman and CEO of Software Testing Assurance Corp. in Stamford, Conn.

f.y.i.

The high cost of replacing help

The cost of replacing an information systems worker ranges from 65% to 120% of his salary, but that doesn't include the replacement's salary or the lower productivity as he ramps up, according to Karen Rubenstrunk, a vice president at Meta Group, Inc., an information technology consultancy in Stamford, Conn.

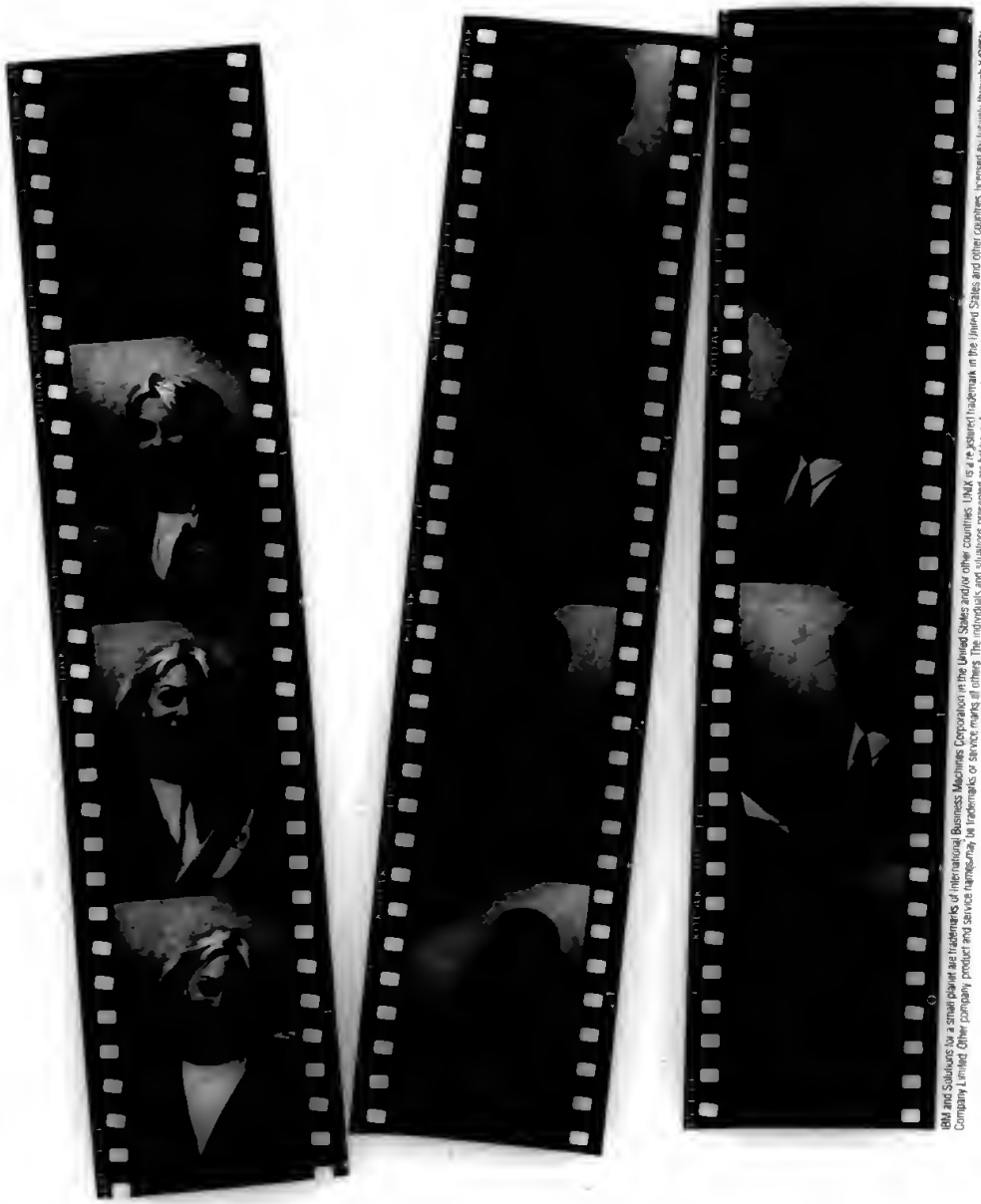
Instead, companies spend that money on headhunters to help find a replacement and lose more money in lost productivity while the job is vacant, according to Rubenstrunk.

She says there are 200,000 IT jobs open in U.S. private industry alone, and the current intense demand will continue until at least 2003, as pressure from delayed projects and deferred infrastructure improvements keeps IS recruiters under the gun. In fact, aftereffects of the year 2000, including the rebuilding of quality assurance programs decimated during millennium work, should keep demand strong through the first decade of the 21st century.

Based on the productivity lost with those 200,000 job vacancies, Meta estimates that the IS labor shortage costs U.S. industry $500 billion in revenue per year, $10 billion in profits and $15 billion in increased compensation costs to attract and retain employees.

The good news? Companies have come up with practices that seem to help retain the employees they have. (*Computerworld*'s IT Careers section, in the Feb. 9 issue, detailed the retention efforts of 25 companies.) Meta says companies successful at retaining people award bonuses linked to individual and team performance rather than company performance. They also provide employees with lots of flexibility in hours, telecommuting and work conditions.

— *Kathleen Melymuka*



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In Depth

By Gary H. Anthes

REARVIEW MIRROR

Though IBM won its antitrust case, the long battle fatigued the company, siphoned off energy — and created the software industry as we know it. Now Microsoft sits on the Justice Department hot seat. Will the company learn from history or repeat it?

Just after 4 p.m. on Friday, Jan. 8, 1982,

the longest and costliest antitrust battle ever fought flickered out. After insisting for 13 years that IBM engaged in a variety of unlawful practices, the U.S. Department of Justice admitted its charges were based on "flimsy" evidence and were "without merit."

U.S. Solicitor General Robert Bork called the conflict "the antitrust division's Vietnam." IBM Chairman Frank Cary called it "the Methuselah of antitrust cases." Most people today say it was an enormous waste of public and private resources. And although IBM officially won the battle, the marathon struggle with Uncle Sam took a toll on the company in several ways.

A reading of the saga offers clues about what could lie ahead for Microsoft Corp. in its antitrust skirmishes with the Justice Department. And it offers lessons for how the government and Microsoft might avoid another antitrust quagmire.

There are striking parallels between the IBM and Microsoft cases. Both are powerful, aggressive companies with big market shares surrounded by smaller competitors eager to cry unfair competition. Both have bundled products in ways that critics say lock in customers and stifle competition. Both were accused of bullying and manipulating competitors and business partners, and both were said to unfairly pre-empt competition by prematurely announcing products.

On the other hand, both companies created pervasive computing standards that greatly simplified the lives of customers. And both made huge investments in innovation that enriched applications and drove down computing costs.

Veterans of the IBM suit and antitrust experts say that for Microsoft to succeed in its case, the company must increase its political savvy and perhaps soft-peddle some of the very traits — aggressiveness and arrogance — that have helped it prosper.

Rearview mirror, page 65

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REARVIEW MIRROR

CONTINUED FROM PAGE 63

BIG BLUES

"I remember vividly that some executives would carry around two briefcases — one for regular work and the other for the antitrust case," says management consultant Sam Albert, who was an IBM executive during the antitrust battle. "The case permeated the fabric of [IBM], and it was a huge drain on management resources and talent."

According to IBM officials, Cary spent 45 days giving depositions in the case and countless more preparing for them. Some 2,500 depositions were taken in all, and IBM compiled and stored in special warehouses 66 million pages of evidence. At the lawsuit's peak, more than 200 IBM lawyers were working on the case, on whom the company spent tens of millions of dollars annually.

The case went to trial in 1975, six years after the lawsuit was filed. The parties called 974 witnesses in the six-year trial and produced 104,400 pages of testimony. One witness, an economist, was on the stand 31 days for the government and 36 days under cross-examination by IBM. The government took three years to present its case, eight times longer than it had planned.

Compounding IBM's burden, the government action encouraged competitors to also file antitrust suits. IBM won all the major cases, but the cost was enormous.

"Some [IBM] executives would carry around two briefcases – one for regular work and the other for the antitrust case."

– Management consultant Sam Albert (an IBM executive during the case)

"Frank Cary once told me I had the only unlimited budget at IBM, and I'd already exceeded it," says Nicholas deB. Katzenbach, a former senior vice president and the company's chief counsel during the trial.

All IBM employees had to read and sign a lengthy code of "Business Conduct and Ethics." Employees also became ultracautious in their efforts to avoid anything that might be seen as illegal or might attract additional lawsuits. Albert, who was a marketing manager during much of the period, says salespeople often came under tougher internal review when they won a deal than when they lost one.

Katzenbach, who insists that IBM never engaged in any illegal activity, says he advised the company not to alter its business practices as a result of the suit. "But every now and then I'd tell someone, 'Look, there's nothing wrong with doing that, but you'll get another lawsuit. So be sure you've got enough money coming in to pay for it.' "

The lawsuit also eventually stratified IBM in a way that made it harder for users to integrate its products. By the early 1980s, IBM had split its products into several incompatible lines in anticipation of a court-ordered breakup.

And customers shared the cost of the case's "huge administrative burden," says former IBM lawyer Robert S. Stone. "It had to increase the cost of products," he says. "Since IBM was always a very profitable company, [the cost of the litigation] was passed on to the customer" rather than absorbed by shareholders.

But customers reaped one huge benefit from the antitrust action. In 1969, IBM voluntarily — but clearly under pressure from the government and private lawsuits — unbundled its pricing of hardware, software and services. Until that time, software and services were provided with hardware without a separate charge. The government said such a practice was an illegal barrier to entry into those markets.

Allan Ditchfield, now chief information officer at Progressive Insurance Co. in Mayfield Village, Ohio, was at IBM during the antitrust suit. "I worked with two guys at IBM," he recalls, who "told me in 1968 they were going to go out and sell software. I thought they were crazy, because at the time we were giving it away." The guys' names? "McCormack and Dodge," Ditchfield says.

But unbundling and the introduction of the fabulously successful System/360 line of mainframes in the mid-1960s produced an explosion in the number of independent software suppliers — including, eventually, Microsoft. "From a customer's point of view it was terrific because it instilled competition where there hadn't been any," Ditchfield says. "If it weren't for the antitrust thing, we'd still be eating PL/1 for lunch."

LESSONS LEARNED?

There were several flaws in the government's case, observers say. First, the computer industry changed so fast, and the case moved so slowly, that the target faded from view. The government's claim that IBM monopolized the general-purpose computer market in the 1960s lost much of its force by the early 1980s as competition mushroomed, IBM unbundled and its market share fell.

Second, the government's economic analysis was fundamentally flawed in several ways, some critics charge. A 1983 study by Charles River Associates in Boston concluded, "The whole of the government's case was a reiteration of complaints about *lower* prices and *better* products — the antithesis of what monopoly produces. ... Correct analysis shows the computer industry to [have been] highly competitive."

Third, the Justice Department — some say with the deliberate encouragement of IBM — allowed the complexity of the case to spiral out of control. Trial Judge David Edelstein ordered thousands of pages of depositions read aloud into the record but then exited the courtroom without listening to them. *American Lawyer* magazine called the trial "a farce of mind-boggling proportions."

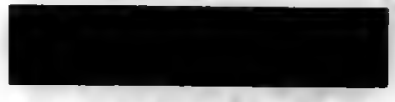
"IBM fought a war of attrition," says Thomas Christo, a trial lawyer at Hare & Chaffin in Boston. "They had a whole building devoted to nothing but wearing down the Justice Department. The case was argued over so many inanities and irrelevancies that, by the time it ended, everybody had forgotten what the original argument was."

FAST-FORWARD

Microsoft might profit from that strategy, Christo contends. "The arguments I've heard from Microsoft so far are too facile, too simple," he says. "They have to play the obfuscation game. Bill Gates is a victim of his own intelligence and honesty, and he has no patience for this kind of thing."

In November, Gates publicly challenged Justice Department "bureaucrats" and called a threat to fine Microsoft a "no-op" — a dummy computer instruction that does nothing. Observers say Gates and his lawyers have committed a huge public relations blunder by showing contempt in their dealings with antitrust regulators and a federal judge.

Microsoft officials declined to be interviewed for this story. A spokeswoman said it is too early to say how Microsoft might respond to the antitrust charges over time or how the company might be affected by them.



Observers say Microsoft has committed a huge public relations blunder by showing contempt for antitrust regulators and a federal judge.

Observers say Microsoft has a long way to go to match IBM's political savvy. During the 1960s and 1970s, IBM Chairman Thomas J. Watson Jr. and other senior IBM executives were far more active in Washington circles than Gates and his lieutenants are today.

"IBM, in those years and long before, had maintained excellent relations with the U.S. government, from the White House on down," says James Cortada, a computer industry historian and an executive consultant at IBM. "Also, ex-government officials from time to time became IBM employees or members of the board. Katzenbach, for example, served in the Johnson administration. We were not stupid; we worked that part of it."

But former U.S. Attorney General Katzenbach vigorously denies the use of any political connections during the trial. "We didn't touch the political side, ever," he says. "I never went to Washington on anything to do with IBM. In fact, I think it hurt us, because I'd given the antitrust division hell when I was down there because they did such ineffective work."

Asked what advice he'd offer Microsoft in its antitrust hot spot, Katzenbach says, "When the government brings a case against you, it's a serious matter and you have to take it seriously. And if there are ways to settle the case, you ought to do it — unless you think it's going to cost you the company." □

Anthes is Computerworld's senior editor, special reports. His Internet address is gary_anthes@cw.com.

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IT Careers

SYSTEMS ANALYSTS: EVERYONE WANTS 'EM, WHATEVER THEY ARE

BY EMILY LEINFUSS

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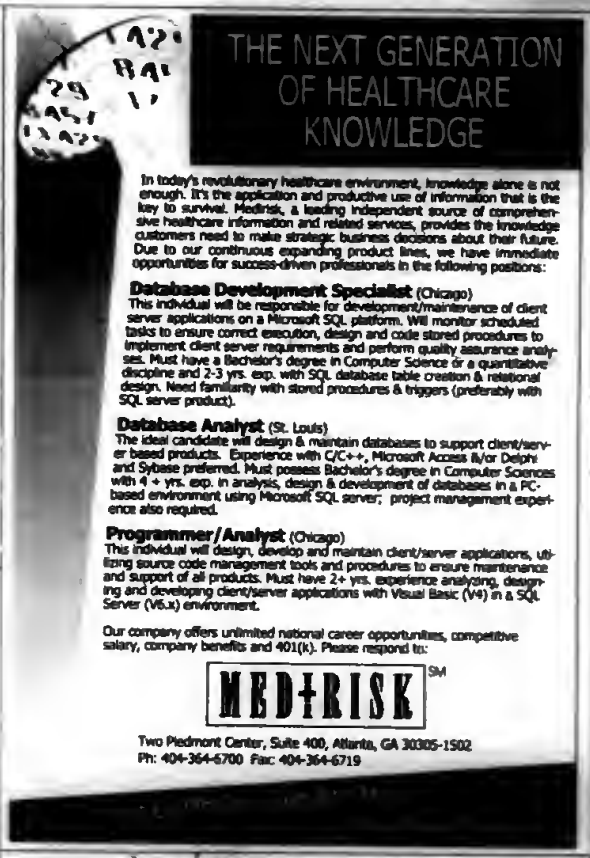

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REGIONAL SCOPE HURTS SO GOOD

San Francisco & Silicon Valley

IT jobs in vendor country can mean long hours, lots of stress and little appreciation. But who cares?

By Amy Malloy

What do you need to survive an IS career in the vendor community? A thick skin. And where can you go to test your resilience? Silicon Valley. Here, "on the best of days, you break even," says John Roberts, director of IS at Prism Solutions, Inc. in Sunnyvale, Calif.

It leaves you wondering if it's worth the stress, long hours and lack of gratitude. To find out if it is, *Computerworld* spoke with five information systems professionals at local hardware and software companies. Their take? You'd better believe it's worth it.

Those five IS professionals will be the first to tell you the work at vendor companies isn't always easy. But it is challenging, exciting and personally rewarding. After all, those IS professionals aren't on a suicide mission; they have lives outside the office. You know, kids, friends, hobbies ... they chose Valley life.

For example, Jeremy Liang, chief information officer at Trend Micro, Inc. in Cupertino, Calif., has worked in IS all over the country. Eight years ago he landed in Silicon Valley, and he says that's where he should have been from the start.

Chris Collins is another Silicon Valley diehard. He's been MIS manager at Mercury Interactive Corp. in Sunnyvale, Calif., for more than two years. He was in IS at Tandem Computers, Inc. for seven years before that. He has enough experience in the vendor community to know that is where he wants to be.

Working in Silicon Valley means putting in long hours. "The opportunity exists to work as much as you want," says Pierre Pellissier, a network manager at Bay Networks, Inc. in Santa Clara, Calif. "You don't get kicked out at night." Most IS professionals put in 60-hour workweeks, Collins says.

Collins is up-front about other drawbacks. He warns those considering jobs in the area to be prepared for heinous traffic, high competition and high rent — unless you have a lot of money to buy a house. The median house price in Santa Clara is $329,110, said the California Association of Realtors.

But Collins is equally quick to point out that there is tremendous job opportunity and the potential to make a lot of money. Naturally, salaries vary depending on IS experience. For example, a database administrator can earn between $50,000 and $80,000 per year, he says.

Another way to make significant cash is at a start-up. Local venture capital investments increased by 54% last year compared with 1996, according to Joint Venture: Silicon Valley Network in San Jose, Calif. Start-ups provide a unique IS experience, says Roberts, a former start-up employee.

But talk about stress. "You might hear that 10 people are starting on Monday or there are budget restraints because things did not go as expected," Roberts says. And employees in this type of environment usually get to work very autonomously. "There is not time for the bureaucracy of approval; decisions need to be made so you can move on," Roberts says.

Once you get an IS job, you likely will find yourself supporting a technically savvy staff, guilty of installing software that interferes with company applications, those Silicon Valley professionals say. "You get in a technical environment, and people tend to think they know more than you do," Roberts says.

There can be some good in this. "You get fewer naive questions," Pellissier says.

LATEST AND GREATEST

One selling point for software and hardware companies that are recruiting staff is the exposure that IS professionals get to new technologies. "You get to work on new technologies, things that you can't buy yet," says Ken Thomas, a senior network analyst at Bay Networks.

Getting that exposure to the latest technology shouldn't be a challenge for job seekers. Like the rest of the country, Silicon Valley is hungry for IS talent.

It's hard to find someone who fits the complete job description, so you look for "people that fit part of the mold, and give them job training to bring them up to speed in deficient areas," Collins says.

Because it's such a challenging environment, certain qualities can help. Tops on the list: being passionate about new technology and capable of handling or bringing about change, Pellissier says. If you need a lot of direction, Silicon Valley may not be the place for you, he says.

Career paths for IS staffers in hardware and software companies are similar to those of IS workers in nontechnical industries. But there tends to be more job movement, those IS professionals say. Roberts advises employees to keep their resumes updated because many vendor companies don't offer much stability.

Because of the competition for good staff, IS professionals easily can get a 10% salary increase when they move to a different company, Roberts says. But there is job security in a strong skills set. "Job security for good people is high," Pellissier says. When layoffs happen, "poor performers are the first to go," he says. □

Malloy is Computerworld's associate editor, Review Center.

IS SALARIES IN THE BAY AREA

Title	Salary
Director of IS/MIS	$82,000
Director of systems development	$80,000
Senior systems analyst	$65,000
Project manager	$60,000
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Systems programmer	$50,000
LAN manager	$49,000
Technical support manager	$45,000
Technical specialist	$35,000
Help desk operator	$31,000

Source: Computerworld's 1997 Annual Salary Survey

Top skills in demand

IS professionals in Silicon Valley say there are systems needs in an abundance of areas. Companies also are looking for employees with good business sense. Applicants with both are shoe-ins. The skills in demand run the gamut. Some of the key areas are databases, Windows, networking, Unix, World Wide Web, Java and Hypertext Markup Language, electronic commerce, application development and systems administration.

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Source: Joint Venture: Silicon Valley Network, San Jose, Calif.

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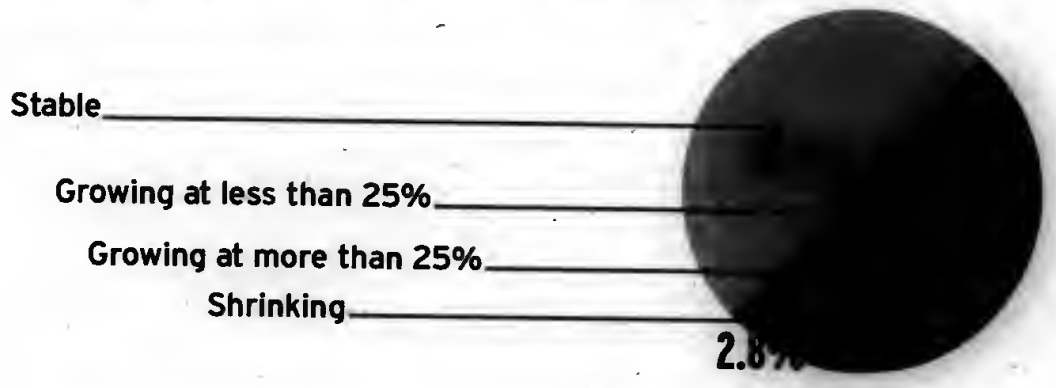

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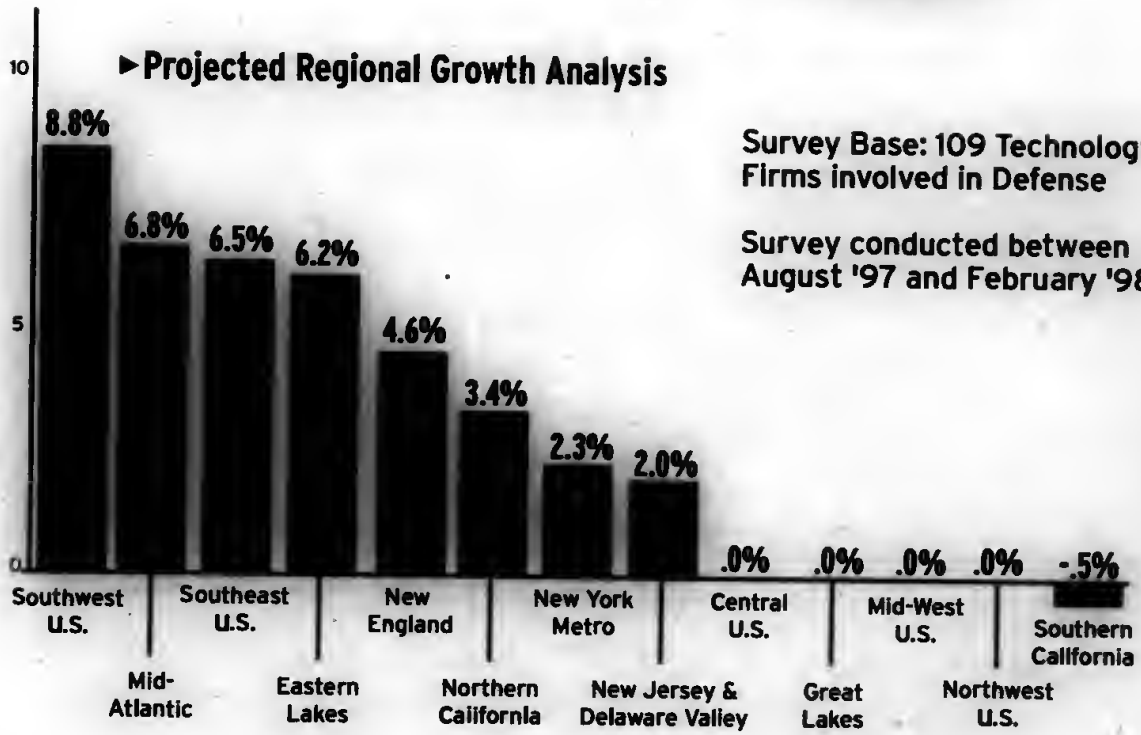

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Survey conducted between August '97 and February '98

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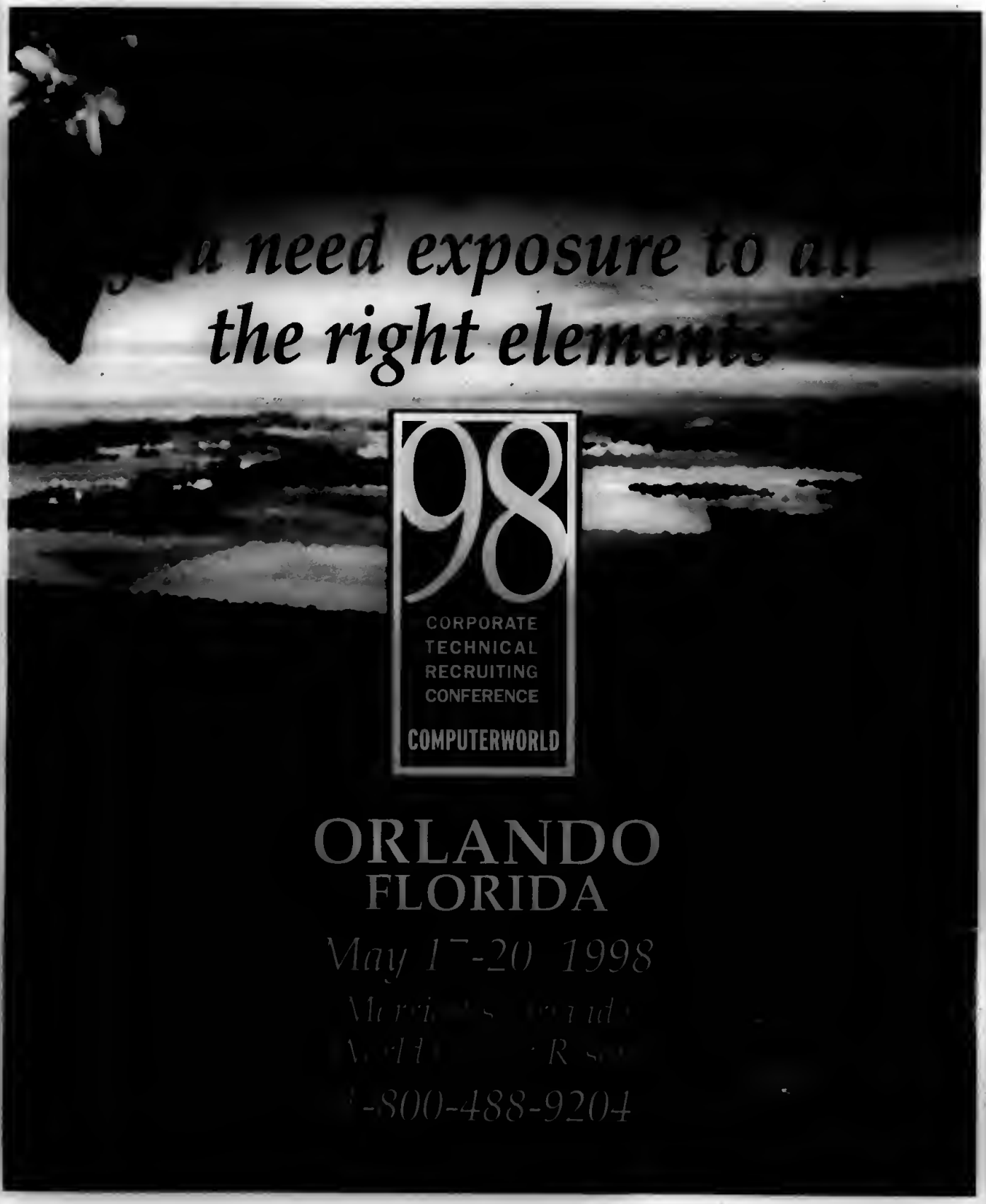
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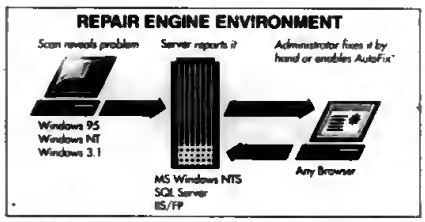

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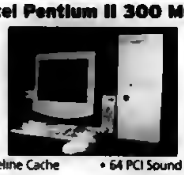

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The Week in Stocks

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PERCENT

Cayenne Software Inc.	78.1
Madge Networks NV	32.1
Novell Inc.	24.6
Platinum Software (H)	23.8
Network Computing Devices	22.6
Amazon.com (H)	22.4
Advanced Micro Devices	21.7
Xircom	19.3

DOLLAR

Amazon.com (H)	13.75
Dell Computer Corp. (H)	13.06
Microsoft Corp. (H)	9.00
Yahoo! Inc.	8.56
Lycos Inc. (H)	8.44
Autodesk Inc.	6.47
Xilinx	6.06
SEI Corp. (H)	5.88

Losers

PERCENT

Micron Computer Corp.	-15.4
Maxtech Inc.	-14.0
LSI Technology	-14.4
Inprise Corp.	-13.5
ProCom Technology, Inc.	-12.2
Sterling Inc.	-10.0
Stratus Corp.	-8.5
Zoot Corp.	-7.9

DOLLAR

Seagate Inc.	-3.81
VLSI Technology	-1.31
Digital Equipment Corp.	-2.44
Computer Task Group	-2.06
Intel Inc. (H)	-1.88
Compaq Computer Corp.	-1.69
Storage Computer Corp.	-1.63
Policy Management Sys.	-1.50

INDUSTRY ALMANAC

LCI ripe for the picking

LCI International, Inc. (NYSE: LCI) in McLean, Va., recently posted another year of strong growth, making it a prime acquisition candidate in the world of telecommunications consolidation, analysts say.

The long-distance voice and data carrier posted revenue of $1.6 billion for 1997, up 26% from $1.3 billion in 1996. Revenue in 1996 had jumped 64% from the previous year.

And the company's income for 1997 increased by 29%, from $75 million to $97 million. Analysts say LCI is growing four to five times faster than the industry average.

Five financial analysts give LCI's stock high marks, with Accumulate or Buy ratings. They praise the company's strong executive management, growth of its installed fiber-optic network and its performance record.

"These guys know the business and play across all the markets and do everything right," says Anthony Ferrugia, an analyst at A. G. Edwards & Sons, Inc. in St. Louis.

LCI last year hired Anne K. Bingaman as president of its local services unit. Bingaman was formerly the U.S. Department of Justice's attorney in local service regulation.

LCI also has started to piece together its own national network. Because of its network and overall growth, LCI is a candidate for takeover by a Baby Bell that wants to get into long-distance services by the end of the year, says Philip Wohl, an analyst at S&P Equity Group in New York.

About 75% of LCI's revenue comes from small and midsize businesses.

Big companies might become more interested in hiring LCI as a carrier because it is the only one to charge for services by the second compared with other carriers that charge in six-second intervals, says Alvin Ali, an analyst at Chicago-based Everen Securities, Inc.

— Matt Hamblen

TAKEOVER TARGET?

LCI International has seen its fortune rise with its stock price

Exch	52 Week	Range		Fri 27 Wk Net Change	Wk Pct Change
Computer Hardware					
CDMS	38 69	24 00	I COM Corp	36 69	3 66	10 3
AIT	45 38	27 63	AMERITECH Corp	41 63	0 19	0 5
ASND	63 75	22 00	Ascend Communications	57 81	2 88	8 2
T	66 20	38 75	AT & T	62 00	0 44	0 7
BNTN	4 88	1 19	Banyan Systems Inc	4 06	0 75	6 6
BAY	41 88	15 08	Bay Networks Inc	34 31	3 31	10 7
BEL	93 81	38 75	Bell Atlantic Corp	80 50	0 75	0 8
BLS	62 38	35 38	BellSouth Corp	60 13	1 94	3 3
BBAT	20 75	9 25	Broadband Technology	15 88	1 00	1 2
CS	46 50	12 63	Cabletron Systems	33 56	0 38	2 4
CCBM	21 38	8 38	Cambridge Communications	13 38	0 63	4 8
CSCO	66 00	30 19	C sco Systems Inc (H)	66 00	2 38	4 4
CMNT	6 38	3 31	Computer Network Tech +	4 19	0 06	1 5
CNCX	16 00	1 88	Concentric Network Corp	14 38	2 00	16 8
DIGI	12 75	17 00	DSC Communications	28 31	1 00	5 5
FORE	35 75	10 00	FORE Systems Inc	16 63	1 00	6 0
GDC	9 38	5 25	General Datacomm Ind	6 00	0 31	0 1
GSN	51 00	16 13	General Signal Network	46 56	0 88	2 2
GTE	55 75	40 38	GTE Corp	54 06	0 31	0 8
LU	108 38	60 00	Lucent Tech (H)	100 38	0 44	0 4
MADGF	11 75	3 25	Madge Networks NV	6 44	1 56	32 1
MCIC	88 44	27 31	MCI Communications Corp (H)	47 88	0 00	0 1
NTWK	5 25	2 00	NetManage Inc	2 69	0 13	4 4
NTWK	4 25	0 61	Network Corp	1 63	-0 25	13 3
NCDN	14 31	5 88	Network Computing Devices	12 75	2 44	23 6
NWRI	22 38	11 25	Network Equipment Tech	13 94	1 38	10 9
NN	68 38	18 94	Newbridge Networks Corp	23 13	0 75	3 4
NT	38 94	31 00	Nortel (Northern Telecom) Ltd	33 19	0 88	10 1
NOVL	13 00	6 38	Novell Inc	10 25	2 56	26 6
ODSI	19 25	5 19	Optical Data Systems Inc	6 88	0 38	5 8
PCTI	18 63	3 63	Picturetel Corp	7 19	-0 44	5 8
PTON	3 56	1 00	Proteon Inc (L)	1 00	-0 03	2 9
RACD	4 25	1 00	Racotek Inc	2 38	0 44	14 6
RADS	25 38	1 00	Radiant Systems Inc	10 88	1 13	6 3
RETX	7 63	1 38	Retix	4 97	0 00	13 2
SBC	78 00	49 25	SBC Communications	75 00	1 19	1 6
SFA	24 94	14 00	Scientific Atlanta Inc	17 81	0 38	2 9
SHVA	17 25	8 94	Shiva Corp	13 63	1 38	11 2
FON	80 56	41 88	Sprint Corp (H)	65 56	5 38	8 9
QWST	58 25	18 38	Qwest Communications (H)	38 00	1 13	9 5
SMSC	10 13	8 00	Standard Microsystems Corp	8 38	0 75	7 3
USW	52 38	21 13	U S West Inc (H)	52 94	1 44	2 8
WBC	26 25	7 00	Wilcom	12 75	2 00	19 1
XYLN	20 38	12 38	Xylan Corp (H)	24 50	2 00	8 9
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Computer Services						
DGN	37 94	15 38	Data General Corp	20 63	2 44	13 4
DEC	63 63	25 00	Digital Equipment Corp	17 19	2 44	-4 3
IBM	113 38	63 63	IBM	104 81	2 81	2 8
MDCD	5 75	2 88	Meridian Data Inc	3 38	-0 00	1 7
NL9	43 38	25 63	NCP Corp	31 88	0 19	0 6
PRCM	18 63	7 00	Procom Technology Inc	9 00	1 25	12 2
SQNT	31 25	16 38	Sequent Computer Sys	21 69	1 75	8 8
TEXM	6 00	2 19	Texas Micro Inc	3 81	-0 00	1 8
SBN	80 75	48 25	Stratus Computer Inc	50 19	0 63	1 3
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ARDT	12 25	5 00	Ardent Software	10 50	-0 31	2 9
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ADSA	13 13	28 00	Autodesk Inc	38 38	6 41	15 4
BCSS	45 50	27 50	BCS Systems Inc	44 41	0 59	1 4
BMCS	78 75	38 63	BMC Software Inc (H)	78 75	2 13	2 7
BOOI	35 25	19 63	Booki and Baggage	33 75	0 63	1 9
BORI	12 19	9 88	Borland Int s Inc	8 31	-0 38	1 9
BOBY	14 75	6 63	Business Objects (H)	14 06	-0 13	-0 9
CATN	5 38	0 94	Cayenne Software Inc	2 78	0 78	19 1
CNTRC	5 13	0 88	Centura Software	1 50	0 00	0 1
CHMPF	60 00	16 75	Checkpoint Software	00 00	-0 00	1 2
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MENT	13 13	6 50	Mentor Graphics	10 94	1 00	10 1
MMFGY	52 88	38 75	Micro Focus	51 38	1 38	1 0
MCRI	11 88	4 38	Microlibrary Inc (H)	11 50	0 38	4 8
MSFT	80 75	48 75	Microsoft Corp (H)	80 75	8 00	11 7
OBJS	1 00	0 44	ObjectShare, Inc.	1 00	0 00	2 0
OMTL	75 00	8 25	Optimal Ltd	11 38	1 38	13 8
ORCL	42 13	17 75	Oracle Corp	24 81	0 06	0 3
PMTC	61 44	37 00	Parametric Technology	51 44	2 81	4 8
PSFT	44 94	25 31	Peoplesoft (H)	44 94	3 69	8 8
PTEC	19 25	11 00	Peritech Technologies	15 38	0 88	6 0
PSQL	18 38	6 50	Platinum Software (H)	18 94	3 81	25 0
PLAT	31 13	10 25	Platinum Technology	25 44	-0 88	-3 3
PRGS	68 00	12 00	Progress Software Corp (H)	29 38	2 63	11 5
RNBO	68 00	13 75	Rainbow Technologies Inc	24 25	1 25	4 9
SEBC	22 88	5 00	Sag Bunch Systems Inc	5 75	0 00	1 1
SOSS	6 00	1 75	Soss Systems Inc	3 06	0 13	4 3
SAPE	80 00	30 00	Sapient Corp	76 00	1 63	2 2

Exch	52 Week	Range		Fri 27 Wk Net Change	Wk Pct Change
SCOC	7 00	5 11	SCO Inc	4 63	0 00	1 4
SDTI	44 38	21 00	Security Dynamics Tech	15 63	2 63	8 0
SOTA	21 94	8 00	State of the Art	21 88	-0 13	0 6
SSW	53 19	27 38	Sterling Software Inc (H)	51 19	4 38	8 0
SDRC	30 00	15 25	Structr Dynamics Research	28 63	2 25	8 5
SYBS	21 63	6 88	Sybase Inc	10 88	0 88	8 8
SYMC	27 75	12 00	Symantec Corp	26 25	0 63	2 4
SNPS	47 13	29 75	SynOpsys	35 00	0 31	0 9
SSAX	17 63	1 88	System Software Assoc	7 44	0 16	2 3
SYSF	18 00	1 00	Systemsoft Corp	4 69	0 75	19 0
BAANF	46 25	20 00	Ind Baan Co (H)	45 25	1 25	2 8
TBUV	5 19	1 38	Telewisivon Corp	2 00	0 25	11 1
VSIO	18 13	18 13	Visio Corp	16 88	2 13	8 1
WALR	18 25	10 50	Walker Interactive Systems	11 00	2 00	13 8
WALI	29 13	11 31	Wall Data Inc	15 75	-0 38	2 3
WANG	27 25	16 00	Wang Laboratories Inc (H)	27 19	0 88	3 3
Internet						**UP 2.0%**
AMZN	75 25	15 75	Amazon Com (H)	75 25	13 75	22 4
ADL	125 00	50 50	America On Line (H)	121 75	3 81	3 2
ATHM	31 00	10 63	At Home Corp (H)	94 38	5 38	17 3
EDFY	22 13	8 88	Edify Corp	15 88	0 44	2 8
XCIT	69 75	7 38	Excite Inc	48 00	3 50	12 8
SEER	16 13	4 38	Inprotier Corp (H)	16 11	2 38	17 3
LCOS	43 75	11 19	Lycos Inc	41 38	2 19	5 4
NSCP	69 00	14 88	Netscape Comm Corp	19 88	0 00	0 3
NSOL	80 75	11 75	Network Solutions Inc	80 13	0 00	4 5
OMKT	37 38	6 38	Open Market Inc	16 75	1 75	11 7
PEGS	20 75	12 38	Pegasus Systems	20 25	1 38	7 3
PSIX	9 75	4 25	PSINet	7 69	-0 22	2 8
QDEX	4 51	1 19	Quadravistx Corp	2 16	-0 00	4 2
SCUR	14 81	4 75	Secure Computing Corp	11 63	0 38	3 3
SPYC	12 00	4 00	Spyglass Inc	8 38	1 22	17 0
YHOO	71 31	14 69	Yahoo! Inc	71 31	0 56	9 0
Semiconductors						**UP 1.2%**
AMD	28 38	2 69	Advanced Micro Devices	23 81	4 25	29 7
ADI	36 69	21 00	Analog Devices Inc	32 75	1 13	3 6
CRUS	17 75	8 00	Cirrus Logic	10 00	0 25	2 4
CY	18 94	3 38	Cypress Semiconductor Corp	9 44	0 13	1 5
INTC	100 00	62 88	Intel Corp	80 00	-0 44	-0 5
LSCC	74 38	39 75	Lattice Semiconductor	55 88	1 63	3 0
LSI	46 88	18 63	LSI Logic Corp	24 00	1 00	4 0
MCRL	46 88	13 00	Micrel Semiconductor Inc	37 63	5 88	18 5
MU	60 00	22 00	Micron Technology	33 88	0 13	0 6
MOT	80 00	53 75	Motorola Inc	58 19	2 81	-4 6
NSM	42 88	21 38	National Semiconductor	24 31	3 69	17 5
QMRS	80 75	26 88	Rambus Inc	45 75	0 38	0 8
TXN	77 25	35 81	Texas Instruments	38 94	0 69	1 2
VLSI	38 00	16 38	VLSI Technology	19 63	3 31	14 4
XLNX	56 38	28 38	Xilinx	45 75	6 00	15 3
ZLG	25 88	16 00	Zilog Inc	19 94	-0 13	0 6
Telecommunications						**UP 0.2%**
ADPT	54 25	19 50	Adaptec Inc	26 44	2 94	12 5
APCC	34 38	15 25	American Power Conversion	30 00	1 50	5 5
CREAF	25 38	8 63	Creative Technology LTD	23 94	0 31	1 3
RACE	7 25	2 13	Data Race Inc	2 72	-0 22	7 4
DTM	11 25	3 88	Datamax Corp	10 31	-0 19	1 8
EMC	38 56	15 88	EMC Corp (H)	28 38	1 06	5 3
EMUL	21 25	10 00	Emulex Corp	11 63	-0 31	2 8
ESCC	35 88	22 00	Evans and Sutherland	30 75	-0 13	-0 4
EXBT	16 38	5 63	Exabyte	8 00	0 63	8 5
ISKY	2 00	0 94	Intelligent Info Systems	1 00	0 13	13 5
IOM	16 75	7 00	Iomega Corp	9 31	0 63	7 2
IPLS	2 81	0 94	IPL Systems Inc	2 13	-0 00	2 9
KMAG	15 38	11 75	Komag Inc	14 38	0 00	5 0
MTSI	39 88	13 00	MicroTouch Systems Inc	15 88	-0 13	-0 8
MTHC	17 38	3 44	MTI Technology Corp	12 88	0 38	3 0
AQM	23 00	2 25	QMS Inc	5 19	0 25	8 5
QNTM	43 25	16 00	Quantum Corp	25 25	0 44	1 8
RDUS	0 81	0 19	Radius Inc	0 28	-0 03	10 0
SEG	55 11	13 75	Seagate Technology	25 00	1 50	6 4
SOS	17 75	3 00	Storage Computer Corp	6 75	1 38	18 4
STK	69 63	33 25	Storage Technology	00 00	2 94	4 4
TEK	46 44	32 25	Tektronix Inc	44 31	-0 38	0 8
WDC	54 75	14 50	Western Digital Corp	18 44	-0 38	2 0
XRB	80 61	54 75	Xerox Corp (H)	68 69	1 88	2 2
Services						**UP 2.0%**
AMSY	27 75	15 75	American Mgmt Systems	26 00	-0 06	-0 2
ANLY	90 50	14 19	Analysts Int l	35 75	4 13	13 0
AUD	63 69	38 50	Auto Data Processing	61 25	1 00	1 6
CATP	48 50	21 25	Cambridge Tech Partners	45 75	1 50	3 4
CEN	68 00	29 50	Ceridian Corp (H)	46 81	-0 25	-0 5
CDCO	42 25	18 38	Comdisco Inc	42 63	0 81	2 0
CPU	38 00	15 50	CompUSA Inc	35 00	1 00	2 9
CHRZ	52 75	16 75	Computer Horizons	52 75	2 50	5 0
CSC	113 30	51 69	Computer Sciences	108 75	0 25	0 2
TSK	49 38	16 63	Computer Task Group	41 38	-2 06	-4 7
EGGS	11 13	3 63	Eggheads Discount Software	9 38	0 38	4 1
EDS	47 00	09 38	Electronic Data Systems Corp	43 88	-0 20	1 5
ICCI	39 63	10 75	Imacim Corp	33 00	3 31	11 1
INEL	6 69	2 25	Inchelligent Electronics (H)	6 69	1 06	18 9
KEA	47 00	14 63	Keane Inc	46 56	4 56	10 9
MICA	29 75	10 00	Mincage Inc	13 44	-0 75	5 8
PAYX	51 63	25 63	Paychex (H)	51 63	2 00	4 0
PMS	75 38	41 38	Policy Management Sys	71 81	1 38	2 0
REY	08 88	13 75	Reynolds and Reynolds	21 00	0 00	2 4
SCBI	22 25	10 69	SCB Computer Tech Inc	19 75	0 88	10
SEIC	57 75	10 75	SEI Corp (H)	57 75	5 88	13 3
SMS	38 00	38 75	Shared Medical Systems (H)	38 50	0 63	0 8
SSPE	23 38	10 00	Software Spectrum Inc	17 13	1 38	8 7
SDS	35 00	08 75	Sungard Data Systems (H)	34 44	1 00	5 2
VST	13 25	6 50	VanStar Corp	14 00	1 31	8 5

KEY (H) = New annual high reached in period (L) = New annual low reached in period

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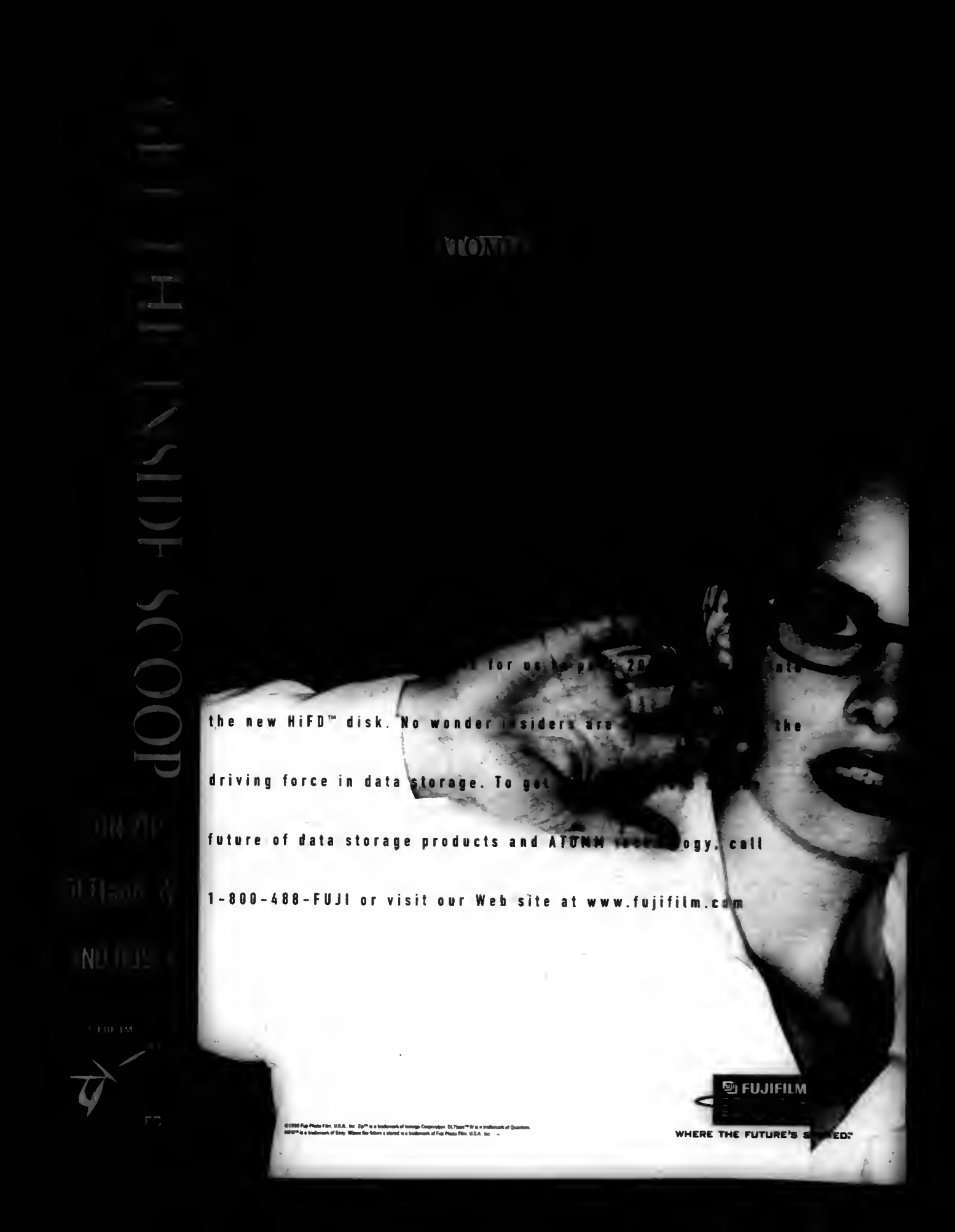
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CASTING A WIDER NET

Ways to enable foreign high-tech workers to fill much-needed positions:

- **Eliminate the 65,000-visa limit**
- **Raise the limit to 80,000 or 100,000**
- **Raise the limit, but require investment or fees that will fund training programs**
- **Keep the limit and better organize the immigration program so the best candidates receive visas**

Proposal could pop cap off high-tech visa limits

By Tim Ouellette

THE CHAIRMAN of the U.S. Senate's immigration subcommittee last week said he is drafting a bill that, if passed, will help high-tech companies hire more foreign workers.

Sen. Spencer Abraham (R-Mich.) said he is preparing legislation that would increase the annual limit of 65,000 H1-B visas to help ease the information technology sector's skilled labor crunch.

H1-B visas allow foreign professionals, mostly in high-tech and health care fields, to enter the U.S. as temporary workers for hard-to-fill jobs.

Industry players such as the ITAA, Microsoft and Sun said the immigration cap needs to be relaxed so they can fill high-tech openings and stay competitive.

Abraham's proposal is a long way from enactment, and even those who support raising the cap acknowledged it could be a tough sell to Congress.

But industry representatives said the situation is becoming urgent.

Last August, all the visa slots were filled with more than a month left in the fiscal year (CW, Sept. 1). And observers predict the limit will be hit this fiscal year in the next few months.

Industry players such as the Information Technology Association of America (ITAA), Microsoft Corp. and Sun Microsystems, Inc. said the immigration cap needs to be relaxed so they can fill high-tech openings and stay competitive.

Critics such as the Institute of Electrical and Electronics Engineers said the visa program is subject to abuse and can be used to displace American workers and underpay foreign temporary workers.

In either case, Congress is feeling pressure to do something about high-tech visas.

"Frankly, as I see it, we are only facing a real crisis if we fail to respond," said Sen. Orrin G. Hatch (R-Utah). He is chairman of the Senate Judiciary Committee, which held a hearing on the topic last week.

Michael Murray, vice president of human resources and administration at Microsoft, testified that the company could fill only 1,700 of its 2,500 open technical positions last year.

And because computer companies sell globally, they need access to foreign workers who can help tailor products to specific markets, Murray said.

While the computer industry supports a simple increase in or lifting of the cap, the Clinton administration and other groups want to see any increase tied to more money for training American workers (see chart above).

Opponents also want to reduce the six-year duration of each visa.

Abraham said his proposal will include a scholarship program to help 10,000 low-income students per year get technical degrees.

A spokesman for Abraham said the bill is still being drafted and there is no timetable yet for introducing it in the Senate. □

Hey, don't steal my staff!

CONTINUED FROM COVER 1

situation." Worse, the cost during the next five months to recruit and replace the employee was especially high, Verchick said. That was because the departing employee had been not only the performance and capacity manager for the site's Candle software, but also Nevada Power's disk storage administrator.

"We don't know anything about this without going through each resume [on file] individually," said Paul Sewell, a spokesman for Candle.

TEMPTATION

The practice of employee poaching by vendors and other partners has been rare, but the rules of the game have changed in the face of the massive information technology worker crunch. "There is such a shortage of IT skills now that the temptation [to raid] is higher than even a few years ago," said Denny Wayson, an analyst at Dataquest in San Jose, Calif.

So fed up users such as Nevada Power are putting their foot down in an attempt to keep vendors from stealing away their best people.

User strategies include inserting specific language into contractor and vendor contracts prohibiting such moves, fostering relationships and "gentlemen's agreements" with vendors, threatening a switch to a different vendor and, in rare cases, even filing a court order to keep the vendor from luring internal staff.

For example, an engineering firm, which requested anonymity, filed a cease and desist order against a major database vendor after the vendor hired away some of the firm's database programmers. Those programmers, as it happened, were a significant part of the firm's small IT staff.

ON THE OFFENSIVE

The information systems arm of Liberty Mutual Insurance Group takes steps up front to ensure that no job-jumping happens.

"We write into the terms of contracts with our vendors that we agree not to solicit each other's employees," said Bill Hickmott, a manager of technical professional staffing at Liberty Mutual Information Systems in Portsmouth, N.H. Market watchers said such contracts are becoming more common.

But in Nevada Power's case, a warning to Candle has sufficed to keep the relationship on an even keel, Verchick said.

Still, vendors are feeling huge pressure to fill their growing payrolls. IBM plans to hire 18,000 service personnel this year alone [CW, Feb. 23].

"We write into the terms of contracts with our vendors that we agree not to solicit each other's employees."

– Bill Hickmott, Liberty Mutual

Networking giant Cisco Systems, Inc. in San Jose, Calif., and SAP America, Inc. in Wayne, Pa., each have about 1,000 job openings. And Level 3 Communications, Inc., a newly launched long-distance service provider in Omaha, plans to hire up to 3,000 workers in the next three years to help build its global network.

That's why some companies plan to at least remain flexible about vendor job inquiries — as long as they are kept in the loop.

"We have a gentlemen's agreement with our suppliers whereby they go through me if they're interested in someone on our staff," said Niraj Patel, chief information officer at Level 3 in Horsham, Pa.

"I was approached once by our [value-added reseller] about hiring a staff member but said no. They honored my decision," he said.

In the end, managing relationships with vendors is only half the problem for IS managers. They also have to make sure they provide the best work environment, training and benefits package to their staffs.

"The bottom line is that there are a lot of companies looking to do more to retain their employees," said Susan Gutman, president of the Colorado Technical Recruiter's Network, an organization of 290 corporate recruiters at vendor and user firms in the state.

In many cases, even if a move from a user company to a vendor is stopped, "that doesn't mean the person wouldn't leave and go to a different company anyway," Gutman said. □

Employee pooling eases tension

The Talent Alliance, a Morrisville, N.J.-based group of vendor and user companies that banded together to fight the IT staff shortage, is hopeful it can avoid employee poaching by sharing skill sets among member companies.

By May, member companies will be able to staff temporary project assignments with employees from another Talent Alliance company that may be finishing a project or is on a slow cycle, said John McMurrow, CEO of the organization.

The service, called LeaseLink, will be based on openings posted on the group's World Wide Web site (*www.talentalliance.org*). That means, for example, that a worker finished with a project at Du Pont Co. could move over to Unisys Corp. for a negotiated period of time, then return to Du Pont. That would give Unisys its needed staffing and Du Pont an employee with new skills and experience. Details such as how to bill for the exchanges in terms of benefits and sudden cancellation of projects still need to be ironed out, McMurrow said.

LeaseLink was one of the founding reasons for the year-old Alliance, which also provides central job training, job postings and information-sharing services to its member companies. However, progress on job exchanges has been slower than initially planned, McMurrow said. — Tim Ouellette

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COMMENTARY

All signs point to NT

Bill Laberis

If I had any doubts about the real reasons Microsoft is so widely despised by its rivals and government bureaucrats alike, they were dispelled by a pair of observations I made recently.

Those reasons have precious little to do with what Microsoft may or may not have done illegally. Rather, you are the reason Microsoft is hated and pursued. Yes, you. Acting with apparent free will, you keep funneling your IT budget dollars to Microsoft, and if that doesn't tick off its competitors and bureaucrats, I don't know what does. Let me explain.

First, I observed a focus group that consisted of 10 senior IT professionals. The moderator asked, "What are your current or future plans for deploying Microsoft Windows NT?" One man, who worked for a manufacturer of medical products that boasts more than 20,000 employees, spoke up. "I should say from the start," he said, "that our CIO, who is in Germany, absolutely hates Bill Gates. He hates him; and he hates Microsoft."

So what about your NT plans?

"We have a few NT servers up and running. I expect we'll be a mix of Unix and NT in a couple years. But like the rest of the world, we'll move mostly to NT."

Hold on. Didn't you just say the CIO hates Microsoft?

"We have no choice but to go with NT."

No choice?

"Well, we considered Unix. But the newer applications the users want all work best with NT. There's more available with NT. Plus, more and more people want to work on NT — not on Unix."

So you did have a choice.

"Yeah. We didn't like the one we had to make."

Did that company choose NT because Microsoft bundled a silly browser with it? Were the CIO or his firm threatened by the Evil Empire? Are its programmers siding with NT because of a Microsoft-engineered Unix smear campaign? Of course not. The CIO knows on which side his company's bread is buttered.

Now the second observation. International Data Corp. recently printed some startling figures. Last year, IDC said, 1.3 million NT workstations were purchased (presumably voluntarily). But only 660,000 Unix workstations were bought.

For the year, NT workstation shipments soared 80%. Unix workstation sales declined 7%. As IDC said, "The numbers are another indication of the increasing penetration of Windows NT into areas that were once the sole domain of Unix."

The Unix myopics counter those signs of demise by claiming that NT is a low-end operating system — that Unix is the only choice for really serious computing.

Is that right? I could have sworn all the major hardware vendors have launched massive NT technology efforts: Compaq/Digital, HP, Tandem, Dell and IBM. All except one, that is — Sun. In a "strategy" reminiscent of Digital's refusal to make IBM-compatible PCs a generation ago, Sun awkwardly stands alone as the only non-NT hardware maker.

And who is Microsoft's biggest and most vocal detractor, both overtly and behind the scenes? If you guessed Sun, you're right.

The big vendors that lined up behind the NT dreadnought have done so voluntarily, albeit perhaps with the same grin-and-bear-it reluctance of the German CIO. The vendors are going where they believe the money is. The customers are going where they believe the solutions lie. Increasingly, that is with NT, not with Unix and its 31 variants. Nothing could be plainer. □

Formerly editor in chief at Computerworld *from 1986 to 1996, Laberis is now president of Bill Laberis Associates, a consulting and publishing company in Hollis-ton, Mass. His Internet address is bill@laberis.com.*

Leave your laptop at home

David Moschella

Ten years from now, when people are asked to describe the strangest thing about computing in the 1990s, they will shake their heads and wonder why a generation of self-described road warriors strapped laptop computers on their backs and lugged them around the world.

Schlepping those heavy, expensive "portable mainframes" — along with batteries, telephone wires and power adapters — will seem as strange to them as it would for us to see someone hauling around a fax machine.

Happily, the end of this embarrassing state of affairs is coming into view. The entry of big guns such as Yahoo, Microsoft and AltaVista into the free electronic-mail market signals a shift in industry evolution. The age of tying mail access to a particular machine will soon end, although those of us in large companies may be the last ones to realize it. Free E-mail drives home the advantages of network-driven computing in a way that Larry Ellison, Scott McNealy and Lou Gerstner should learn from.

Even a short list of the benefits of this approach is pretty compelling. You can access E-mail from any browser-enabled device; families, schools, or small businesses can have one Internet service provider account but multiple, private mailboxes; and personal and business correspondence can be more easily separated. Best of all, you can use E-mail without having your own computer.

From a technical perspective, new services can be rolled out instantaneously because, other than the browser, there's no client software; server backup takes place automatically; and addresses are assigned independently from the underlying service provider. And yes, all this is so easy that it's free.

Today, free E-mail is offered mostly by search engine companies interested in selling advertising. But there's no reason corporations can't provide similar services for employees. The potential savings (fewer laptops, simpler remote-access procedures, lower client software costs) will greatly outweigh any additional expenses for security and authentication. Perhaps more important, IS managers will earn the lasting gratitude of the growing number of employees who dread the idea of dragging along that extra 10 or more pounds.

Indeed, whatever security concerns exist today will likely be taken care of in the next 18 months. Have you noticed how well digital certificate leader VeriSign's IPO has gone?

There's a lot of debate about whether the browser is up to the challenge of becoming a universal application interface. But when it comes to E-mail, it's a no-brainer. Ask any traveling computer user which they'd rather have: a high-performance Notes or Exchange client that has some application advantages but can be used only on their machine, or the ability to access basic E-mail services from anywhere and on any machine?

It's only a small step from here to imagine that, like telephones, E-mail access will eventually be available in hotels, airports, schools, libraries, even shopping malls.

We love all the things our laptops can do; we just don't like toting them around. The more functions that migrate onto the network, the better. Free E-mail isn't important because it's free; it's important because it frees us from our own computers. □

Moschella is an author, independent consultant and weekly columnist for Computerworld. *His Internet address is david_moschella@cw.com.*

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Dispatches & images from the fringes of the electronic frontier

M-M-MAX HEADROOM, THE SEQUEL

Baldy, the latest three-dimensional talking head for computers, is more realistic than 1980s digital TV character Max Headroom ever was, claims developer Fluent Speech Technologies in Beaverton, Ore. When Baldy speaks, the lips, tongue, mouth and facial movements are correctly synchronized with the speech output. The technology could be used in an interactive kiosk, for example, to answer consumer questions and give directions. Baldy is included in a tool kit for building applications that use speech input and output.

Richter scale for the heavy-handed

TypeLighter in New York has developed a typing meter that alerts keyboard users when they hit the keys too hard, reminding users that a lighter touch could reduce the risk of repetitive stress injuries. The prototype meter picks up keyboard vibrations and produces an audio or visual alarm when the typing force is in the danger zone. It can be implemented as an on-screen meter or as an LED display for the keyboard.

More fun than a root canal

Now you can audit your 1997 tax return before the government does. TaxDefenders in Los Angeles offers TaxChecker, software that was created by a former IRS auditor and uses actual IRS auditing tests. It analyzes personal or business returns, banking habits and spending patterns to gauge income. The software comes in personal business and professional versions and costs $49.95 to $269.95.

Digital archives

20 YEARS AGO
(MARCH 1978)

- The Second West Coast Computer Faire is held in San Jose, Calif.
- Digital introduces a low-cost mainframe, the DECsystem-2020, priced at about $150,000. It plugs in to a standard wall outlet and doesn't need an air-cooled room.

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- Headline: Unisys joins AT&T, Sun Microsystems in effort to standardize Unix

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Mitchell Kertzman, Sybase's chairman, may have given up all operating control to new co-CEO John Chen last week, but Kertzman didn't lose his sense of humor in the process. During a teleconference, the onetime disc jockey compared speculation about his fate to the "Paul is dead" rumors that swirled around the Beatles in the '60s. Noting the rogue revenue reporting practices uncovered recently at Sybase's Japanese unit, Kertzman said he had suggested Chen "could be CEO of Japan, and I could be CEO of the rest of the world." Kertzman also joked about how he was best known "for having a pretty big mouth," which will serve him well as he focuses on chatting up users and investors.

You don't want to be picked by this program

Computer Associates International has applied its software development expertise to create a tool that streamlines layoffs, according to the lawsuit Computer Sciences filed last week to halt CA's takeover bid. CSC's brief describes a "merger acquisition program system" that helps CA management wield the long knife. This program sifts through manager rankings, personality profiles and other information to generate a hit list, according to the brief. CA denied such a program exists.

Be careful what you data mine for!

Dale Topham, a data warehousing manager at BC Telecom in Vancouver, British Columbia, told the following story at a recent Data Warehousing Institute conference: A marketing executive thought it would be great publicity if the president took the company's 100 best residential customers to a basketball game. The president agreed. Using the company's data warehouse, they came up with a list. The invitations were at the printer when someone noticed that those customers had something else in common. They were heavy 900 services users. Luckily, the criteria were changed before the president was put in the compromising position of being seen in public with 100 of the biggest telephone sex customers.

Year 2000 compliance software

NetSuite in Wayland, Mass., this week will announce Network2000, software that uses information from its device discovery program to check the year 2000 compliance status of each device on a network. It will ship by the middle of next month.

What's the difference between ...

The Titanic and Digital seem to be a perfect match: two sinking ships. But that probably wasn't what Digital's marketing department had in mind when it decided to ride the coattails of Titanic's newfound film fame with an ad campaign using the doomed luxury liner. Digital is running ads that show a computer-generated image of the ship from the film "Titanic." It seems Digital's AlphaServers were used for some special effects in the box-office smash. At least Digital has a Compaq lifeboat to jump in.

Looking for IT talent, eh?

Immigration lawyer Carl Shusterman says Canada could be a saving grace for high-tech firms because it isn't affected by a limit on foreign visas. That's because Canadian computer professionals can enter the U.S. under professional "Trade NAFTA" status without one of the limited H1-B visas.

So just how bad is the year 2000 situation? It's far worse than you probably think, if the reactions of the folks at the IBM Share user conference in Anaheim, Calif., were anything to go by. When a speaker jokingly asked the audience how many planned to withdraw all their money from the bank or planned not to travel on Jan. 1, 2000, more than half the hands in the room went up in a flash. And this from the folks on the front lines. And you wonder why we're worried. If you have a year 2000 nightmare to share, or any type of news tips, send it to news editor Patricia Keefe at (508) 820-8183 or at patricia_keefe@cw.com.

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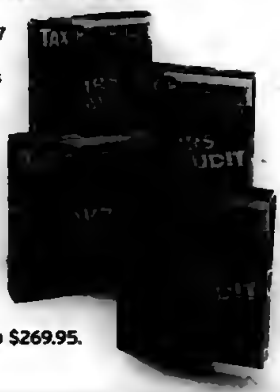

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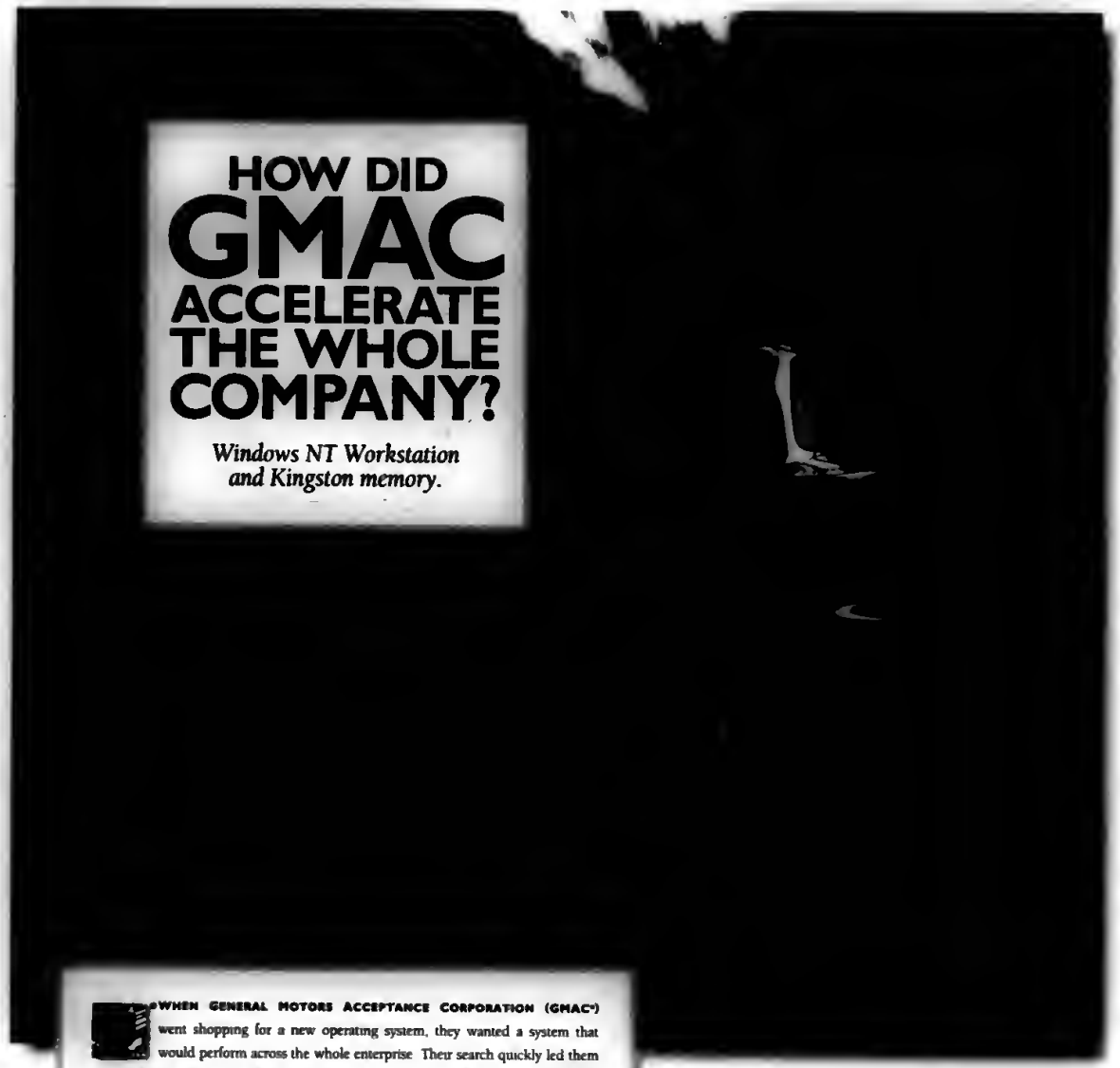

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